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GRAND JUNCTION  
RESOURCE MANAGEMENT PLAN

MANAGEMENT SITUATION ANALYSIS

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2.1 CLIMATE

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CL2.1-1. Climate/Air Quality





## 2.1 CLIMATE

### INTRODUCTION

Due to the rural nature of the Grand Junction Resource Area, available climatic data is limited but representative of the Grand Valley/high plateau region. A climatic history is available from six monitoring stations operated by the U.S. Weather Service throughout the resource area. The most comprehensive dataset is from the Grand Junction (Walker Field) station. Because monitoring data are limited, the following description addresses the resource area as a whole rather than as individual capability units.

### DATA GAPS

Given the limited number of monitoring sites, climatic conditions for all locations in the resource area cannot be specified. Therefore, general indication of conditions for the entire resource area is given. Variables causing the greatest effect on specific microclimate are elevation (affecting temperature and precipitation), topography (affecting wind speed and direction), and solar orientation (affecting temperature and evapotranspiration). These variables will affect plant growth and pollutant dispersion.

Since most wind data are collected in Grand Junction, which is strongly influenced by the Book Cliffs, it is assumed that predominate winds are from the west-southwest under synoptic conditions and along drainages under near calm conditions. It is also assumed that winds at specific sites are very dependent on local topography.

Other climatic parameters either are not measured or too site-specific to be typical of the resource area (i.e., solar radiation, humidity, soil moisture, etc.). Lack of this data should not significantly affect the ability to properly manage the resource area; however, additional monitoring may be required to support specific land use actions in the future.







## GRAND JUNCTION RESOURCE AREA

The Grand Junction Resource Area is located in a high plateau/partially mountainous, continental climate regime characterized by dry air, sunny days, clear nights, moderate precipitation, moderate/high evaporation, and large diurnal temperature changes. The Book Cliffs and Roan Plateau border the northern portion of the resource area and the Colorado River drainage cuts through from east to west. The south and east are characterized by high, forested tablelands separated by the Gunnison River which joins the Colorado River in Grand Junction. The western portion has high mesas and deserts along the Utah border.

The region's complex topography causes considerable variation in site-specific temperature, precipitation and surface winds. Very cold conditions and snowfall can occur, but severe weather conditions such as blizzards, tornadoes, and damaging hail are rare. Table 2.1-1 summarizes monitored values for temperature, precipitation and frost-free periods throughout the resource area, and Figure 2.1-1 indicates the distribution of surface winds at Grand Junction, Colorado.

The extent vertical and horizontal mixing will take place is related to atmospheric stability and mixing height. Distributions of these factors for Grand Junction are presented in Table 2.1-2. Unstable conditions can occur from strong surface heating, typical of summer afternoons, producing upslope winds. Neutral conditions reflect a breezy, well-mixed atmosphere. Stable conditions are enhanced by rapid radiative cooling and downslope drainage, producing the least amount of dispersion.

Inversions are formed under stable conditions, trapping pollutants within a certain layer of air. Moderate inversions are typical during the summer in the evening and dissipate at dawn. Winter inversions are stronger and last longer. Inversions are enhanced by weak pressure gradients, cold clear nights, snowcover and lower elevations.

The climatology of the resource area is very diverse, and prolonged on-site monitoring is necessary to specify local conditions. The following description represents a range of climatic conditions throughout the resource area.

Temperatures vary mostly with elevation and to a lesser extent local microclimate. Summer temperatures will probably range from lows of 62° F to highs of 94° F. Winter temperatures may range from 10° F to 39° F. Extreme temperatures may fall as low as -34° F or up to 106° F. Freezing temperatures and snowfall are possible from October to April, and snow accumulations are likely from November to March.

Annual precipitation would be highly variable, ranging from 8 to 16 inches, with a small late-summer maximum due to thunderstorms. At the highest elevations, half of the precipitation comes from winter snowstorms. Snowfall amounts probably vary from 16 inches at the lower elevations to 64 inches at Altenburn; mountainous accumulation may vary from 40 to 80 inches on Grand Mesa.







TABLE 2.1-1  
SELECTED CLIMATIC DATA

Station	Elevation (ft)	Temperature (°F)			Precipitation (in)			Frost-Free Periods					
		Extreme Min.	Mean Min.	Annual Mean	Extreme Max.	Annual Mean	Monthly Max.	Monthly Min.	Mean Snowfall	# Days	Mean Begin Date	Mean End Date	
Altenburn	5690	-32	29	46	63	101	15.8	1.5	1.0	64.0	125 <u>a/</u>	6/16 <u>a/</u>	10/19 <u>a/</u>
Colorado N.M.	5280	-18	40	52	64	103	11.1	1.7	0.7	41.0	156	5/6	10/19
<sup>ω</sup> Fruita	4507	-34	34	50	67	103	8.4	1.2	0.5	16.0	149	5/8	10/4
Gateway	4562	-28	39	53	68	106	11.0	1.5	0.6	18.0	163 <u>a/</u>	5/13 <u>a/</u>	10/23 <u>a/</u>
Grand Junction	4855	-23	40	53	65	103	8.2	1.1	0.4	25.0	185	4/20	10/22
Palisade	4780	-20	41	54	67	105	9.1	1.2	0.5	14.0	188	4/18	10/23

Primary Source: Pedco Environmental, Inc., 1981.

a/ U.S. Department of Commerce, 1981.

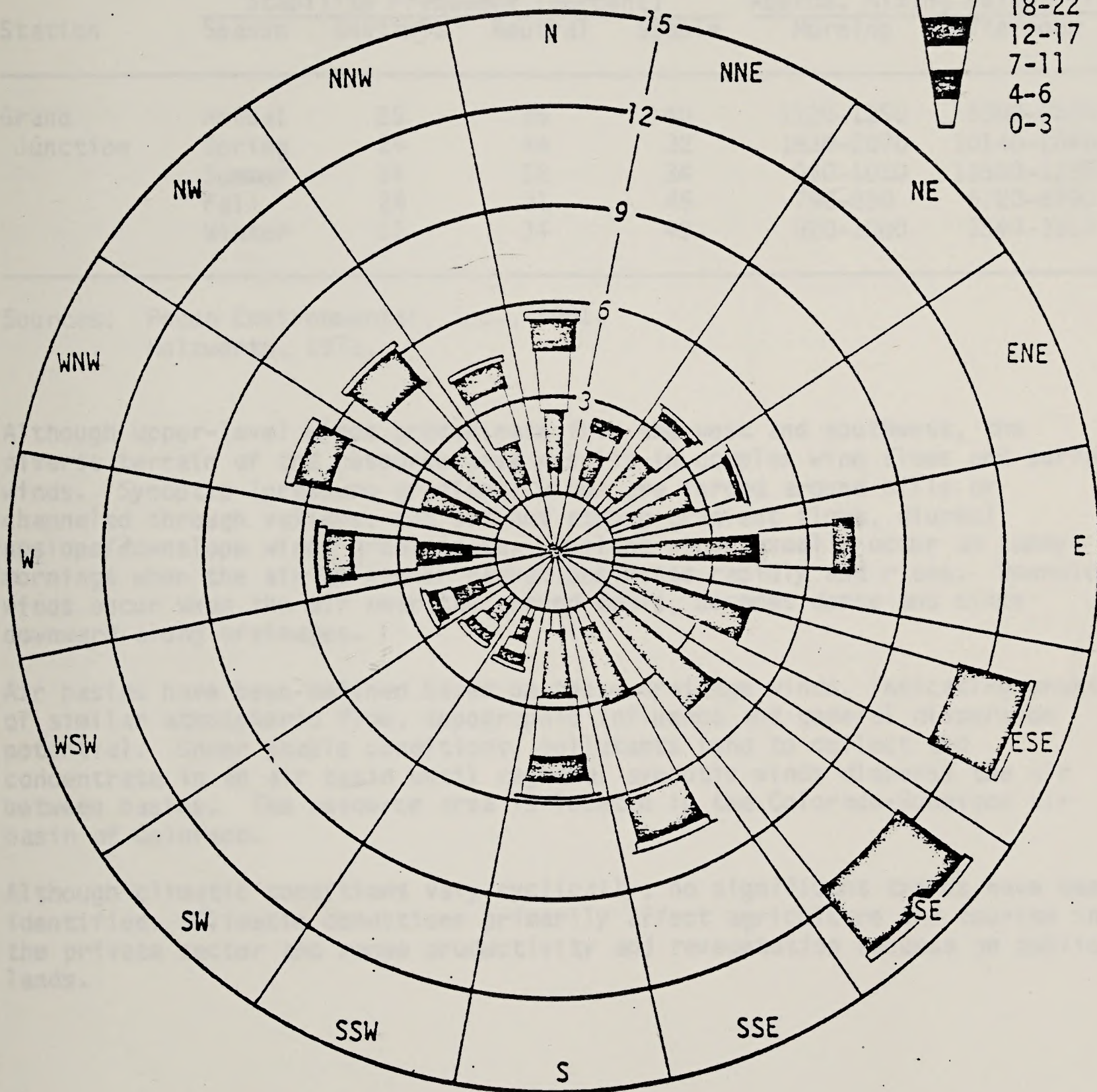
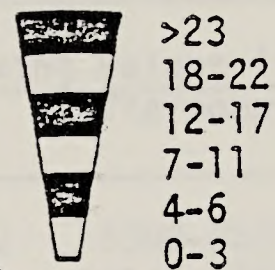




SITE: Grand Junction, Colorado

SITE NUMBER: 23066

WIND SPEED CLASS,  
mph



PERIOD OF RECORD: 1965-1974

TOTAL OBS: 29,212 - Annual

% CALMS: 4.9

Figure 2.1-1 Annual Surface Wind Rose for Grand Junction.

Source: Pedco Environmental, Inc., 1981







TABLE 2.1-1  
SELECTED ATMOSPHERIC DISPERSION VALUES

Station	Stability Frequency (percent)			Approx. Mixing Height (ft)	
	Season	Unstable	Neutral	Stable	Morning      Afternoon
Grand Junction	Annual	25	35	40	1120-1250      8300-8530
	Spring	24	44	32	1830-2070      10140-10400
	Summer	34	32	34	950-1020      12800-12920
	Fall	24	31	45	790-890      6720-6990
	Winter	17	34	49	920-1080      3540-3810

Sources: Pedco Environmental, Inc., 1981.  
Holzworth, 1972.

Although upper-level winds predominate from the west and southwest, the diverse terrain of the resource area results in complex wind flows and surface winds. Synoptic (pressure gradient) winds are forced around hills or channeled through valleys, but without strong gradient flows, diurnal upslope/downslope winds predominate. Upslope winds usually occur on sunny mornings when the air at higher elevations heats rapidly and rises. Downslope winds occur when the air near the ground cools, becomes dense and sinks downward along drainages.

Air basins have been defined based on these drainage winds, indicating areas of similar atmospheric flow, topographic influence and general dispersion potential. Under stable conditions, pollutants tend to collect and concentrate in an air basin until regional synoptic winds disperse the air between basins. The resource area is located in the Colorado-Gunnison air basin of Colorado.

Although climatic conditions vary cyclically, no significant trends have been identified. Climatic conditions primarily affect agriculture and tourism in the private sector and range productivity and revegetation success on public lands.







## 2.2 AIR QUALITY

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## OVERLAY

CL2.2-1. Climate/Air Quality







## 2.2 AIR QUALITY

### INTRODUCTION

Long term air quality data are normally collected for only a few pollutants in specific areas-population centers and near major emitting facilities. As a result, little or no data are available for each pollutant throughout the rural resource area. However, the air quality of the resource area is generally believed to be typical of undeveloped regions in the western United States; ambient pollutant levels are usually near or below the measurable limits. The following description addresses the entire resource area rather than each individual capability unit due to the lack of monitored data.

### DATA GAPS

The limited air quality data which have been collected in the resource area are either representative of population centers or locations of planned or existing major emitting facilities. Particulate measurements are usually site-specific, where concentrations drop rapidly away from sources. Gaseous pollutant concentrations also decrease with distance, but vary less regionally. Factors causing the greatest effect on specific air quality are source strength and dispersion potential. Although natural sources exist, the most significant sources are major emitting facilities (i.e., power plants, refineries, etc.) and secondary sources (i.e., home heating, private vehicles, etc.).

It is assumed that air pollutant concentrations within developed regions are typified by within-town monitors, and that rural concentrations may be represented by a few rural monitoring sites or estimated through atmospheric modeling. Locations vulnerable to decreasing air quality from extensive development include the immediate operation areas and local population centers with their induced impacts.

Since air quality assessments are time- and site-specific, additional air quality analysis will be routinely performed by the BLM under requirements of the Federal Land Policy and Management Act, the National Environmental Policy Act, and the Clean Air Act.







## GRAND JUNCTION RESOURCE AREA

Bureau actions must comply with all air quality regulations, which establish the levels of acceptable air pollution. The following summary describes existing air quality regulations in Colorado.

AIR QUALITY REGULATIONS

National ambient air quality standards limit the total amounts of specific pollutants allowed in the atmosphere - carbon monoxide (CO), lead, nitrogen dioxide (NO<sub>2</sub>), ozone, sulfur dioxide (SO<sub>2</sub>), and total suspended particulates (TSP). State standards include these parameters, but may also be more stringent (i.e., Colorado's three-hour SO<sub>2</sub> standard). These standards were established to protect public health (primary standards) and public welfare (secondary standards). Areas that consistently violate minimum federal standards because of man-caused activities are classified as "nonattainment" areas and must implement a plan to reduce ambient levels below the maximum pollution standards (Table 2.2-1). Under the EPA's "Fugitive Dust Policy," areas that violate the TSP Ambient Air Quality Standards, lack any significant industrial particulate sources, and have a population less than 25,000 are designated as "unclassified" (i.e., neither "attainment" nor "nonattainment"). "Unclassified" areas are generally exempt from offset provisions, retrofit controls, and new source control requirements established for "nonattainment" areas by the Clean Air Act.

To protect areas not classified as "nonattainment," Congress has established a system for the Prevention of Significant Deterioration (PSD) through the Clean Air Act Amendments of 1977. Under this act, areas are classified by the additional amounts of TSP and SO<sub>2</sub> degradation which would be allowed. PSD Class I areas, predominately national parks and certain wilderness areas, have the greatest limitations; virtually any degradation is significant. Areas where moderate, controlled growth can take place were designated as PSD Class II. PSD Class III areas are those that allow the greatest degree of impacts. Colorado has established a similar program limiting additional amounts of SO<sub>2</sub>; Colorado's lands are classified Category I, Category II, and Category III (corresponding to greater permissible levels of SO<sub>2</sub>).

Higher TSP concentrations are to be expected near towns due to local combustion sources and unpaved roads; significant regional TSP levels are probably due to fugitive dust (primarily wind blown). Since fugitive dust particulates are larger than those produced in combustion processes, they settle relatively quickly and present a minimal inhalation health threat. The Environmental Protection Agency may alter the existing TSP regulations to reflect this difference by setting standards for particulates less than 10 microns in diameter, commonly called inhalable particulates and abbreviated PM-10.







TABLE 2.2-1

## State and Federal Air Quality Standards (micrograms per cubic meter)

Pollutant	Averaging <sup>a/</sup> Time	Ambient <sup>b/</sup>				Increment <sup>c/</sup>					
		Federal		Colorado		Class	Federal Class	Class	Category	Colorado Category	Category
		Primary	Secondary	Primary	Secondary	I	II	III	I	II	III
Carbon Monoxide	8 hour	10,000	10,000	10,000	-	-	-	-	-	-	-
	1 hour	40,000	40,000	40,000	-	-	-	-	-	-	-
Lead	Quarterly	1.5	1.5	-	-	-	-	-	-	-	-
Nitrogen Dioxide	Annual (Arith.)	100	100	100	-	-	-	-	-	-	-
Oxidants (Ozone)	1 hour	235	235	160 <sup>d/</sup>	-	-	-	-	-	-	-
Sulfur Dioxide	Annual (Arith.)	80	-	-	-	2	20	40	2	10	15
	24 hour	365	-	-	-	5	91	182	5	50	100
	3 hour	-	1,300	700	-	25	512	700	25	300	700
Total Suspended Particulates	Annual (Geom.)	75	60	75	60 <sup>e/</sup>	5	19	37	-	-	-
	24 hour	260	150	260	150	10	37	75	-	-	-

Sources: National Primary and Secondary Ambient Air Quality Standards (40 CFR 50 et seq. as amended January 5, 1983).

Requirements for Preparation, Adoption and Submittal of Implementation Plans (40 CFR 51.24, as amended September 3, 1982).

Approval and Promulgation of Implementation Plans (40 CFR 52.21, as amended June 25, 1982).

Code of Colorado Regulations (Volume 5, Part 14 as amended May 27, 1980).

<sup>a/</sup> Short-term standards (those other than Annual and Quarterly) are not to be exceeded more than once each year, except hydrogen fluoride, hydrogen sulfide and the federal ozone standards. Under federal regulations, the "expected number of days" with ozone levels above the standard is not to be exceeded more than once per calendar year.

<sup>b/</sup> Ambient standards are the absolute maximum level allowed to protect either public health (primary) or welfare (secondary).

<sup>c/</sup> Incremental (Prevention of Significant Deterioration) standards are the maximum incremental amounts of pollutants allowed above the baseline in regions of clean air.

<sup>d/</sup> The State ozone standard of 160 ug/m<sup>3</sup> was identical to the Federal standard when adopted in 1978. The State ceased applying the 160 ug/m<sup>3</sup> standard when the Federal standard was revised to 0.12 ppm (235 ug/m<sup>3</sup>). Because the 0.12 ppm standard is not exceeded until 0.125 ppm is measured, the State now recognizes 245 ug/m<sup>3</sup> as the equivalent standard. The Colorado Ambient Air Quality Standard have not been revised to reflect this change.

<sup>e/</sup> The Colorado annual secondary TSP standard was established as a guide in assessing implementation plans to achieve the 24-hour standard.







PSD Class I regulations also address the potential for impacts to Air Quality Related Values (AQRVs). These AQRVs include visibility, odors, and impacts to plants, animals, soils, water, geologic and cultural structures. Visibility impacts can occur from atmospheric increases in small, light-scattering particles or increases in light absorbing gases (typically  $\text{NO}_2$ ). A possible source of impact to AQRVs is acid precipitation. Mechanisms of acid precipitation formation are currently under study; preliminary results have correlated ambient sulfuric and nitric acids with combustion by-products (sulfates and nitrates).

### EXISTING AIR QUALITY

Most of the resource area has been designated a PSD Class II, attainment area. An area including Grand Junction and the Grand Valley northwest to Fruita is the Mesa County designated nonattainment area for TSP (Figure 2.2-1 and Climate Overlay CL2.2-1). Colorado National Monument is a State Category I Area and has been recommended for PSD Class I redesignation.

Average and extreme monitored particulate and lead concentrations are presented in Table 2.2-2. Gaseous pollutant concentration data for Grand Junction are presented in Table 2.2-3. Although no nitrogen dioxide data are collected, it is estimated that values are low and well within standards. Although not intensively monitored in the resource area, ozone levels in the Rocky Mountain West are relatively high but of unknown origin. Elevated concentrations may be the result of long range transport from urban areas, subsidence of stratospheric ozone, or photochemical reactions with natural hydrocarbons. The true reason for elevated ozone values is uncertain. Table 2.2-4 presents estimated pollutant concentrations in rural Mesa County.

Although based on limited data it appears that most pollutant concentrations (other than carbon monoxide) have not increased dramatically. The increasing trend for carbon monoxide in Grand Junction could be from increased traffic, although the 1979 data are based on a significantly smaller sample size. Lead values have decreased in Grand Junction, possibly because newer automobiles use unleaded gasoline.

Future development of major emitting facilities within the Mesa nonattainment area will be severely restricted until ambient TSP values are reduced. Given the interest in oil shale development in the De Beque Capability Unit, it is possible that the entire PSD Class II increment may be allocated in that area, precluding further major developments. Continued urbanization will probably lead to increased carbon monoxide, nitrogen dioxide and particulate concentrations unless additional control technologies are applied.

In general, decreasing air quality may lead to more restrictive development, greater health effects and possible secondary impacts to agriculture and tourism. These impacts should be minimized through compliance with air quality regulations, however.







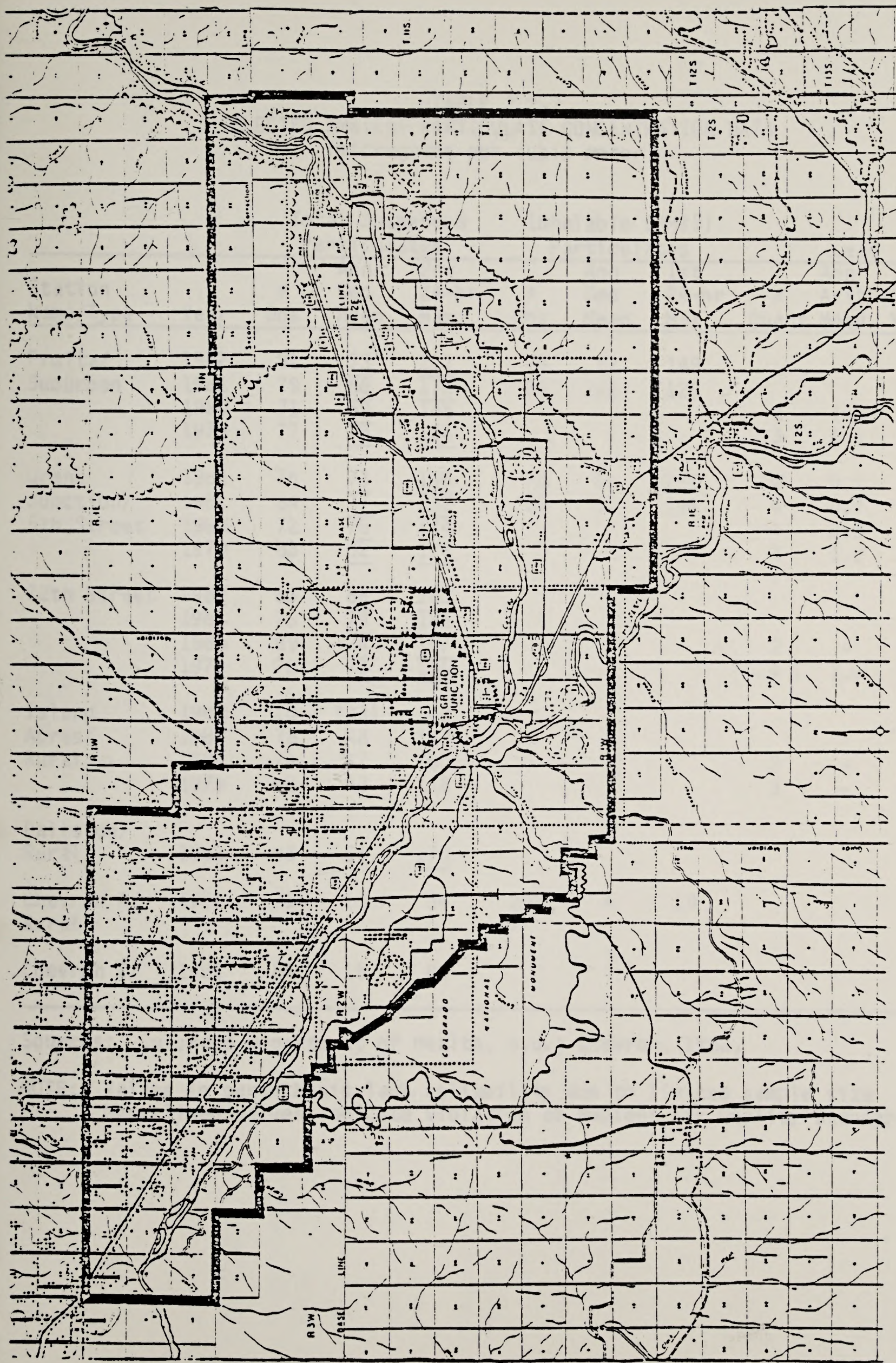








TABLE 2.2-2  
SELECTED AMBIENT PARTICULATE CONCENTRATION DATA  
(micrograms per cubic meter)

Station Name/Type	Year	Total Suspended Particulates			Inhalable (PM15) Particulates			Lead		
		# Obs	Ann Geo Mean	2nd 24-hr Max	# Obs	Ann Geo Mean	1st 24-hr Max	# Quart	Ann Arith Mean	1st Quart Max
Fruita/ Suburban	1982	81	73	212	76	52	149			
	1981	79	<u>86</u>	<u>178</u>	74	102	129			
	1980	71	<u>69</u>	<u>145</u>				2	(-)	(-)
	1979	77	<u>76</u>	<u>164</u>				3	(-)	0.4
Grand Junction/ 5th Street	1982	76	73	196	76	59	251	4	0.7	1.0
	1981	84	<u>77</u>	<u>232</u>	65	57	194	4	0.7	1.0
	1980	72	<u>78</u>	<u>144</u>				4	0.8	1.0
	1979	83	<u>82</u>	<u>176</u>				4	1.0	1.5
12th Street	1982	83	<u>66</u>	<u>183</u>						
	1981	78	<u>79</u>	<u>186</u>						
	1980	69	<u>74</u>	<u>167</u>				2	-	1.2
	1979	76	<u>73</u>	<u>196</u>				4	1.0	<u>1.7</u>
Island Acres/ Rural	1982	10	(33)	42						
	1981	78	48	113						
	1980	74	47	150				2	-	0.4
	1979	82	43	116				3	-	0.3
Palisade/ Rural	1982	83	54	<u>170</u>						
Chevron A/ Rural	1981	71	10	34	293	4	19			
Chevron E/	1981	84	15	89						

Sources: Colorado Department of Health, n.d.; Chevron, 1982.

NOTE: Values in parenthesis lack reliability due to limited sample size  
Underlined values indicate violation of Ambient Air Quality Standards.







Table 2.2-3  
Selected Ambient Gaseous Pollutant Concentration Data  
(micrograms per cubic meter)

Name/Type	Year	Carbon Monoxide				Sulfur Dioxide				Nitrogen Dioxide				Ozone	
		#	2nd	2nd	#	Ann	2nd	2nd	2nd	#	Ann	Ann	#	1st	
			8-hr	1-hr											24-hr
Grand Junction/ Rural	1982	347	7,590	12,650	319	13.1	26.2	52.4							
	1981	298	9,315	14,375	234	13.1	21.0	52.4							
	1980	306	7,015	13,225											
	1979	212	4,370	8,050											
Chevron A/ Rural	1981	---	2,500 <sup>a</sup> /	3,000 <sup>a</sup> /	---	1	14 <sup>a</sup> /	17 <sup>a</sup> /	---	4	---	---	180		
Chevron E/ Rural	1981										---	---	190		

Sources: Colorado Department of Health, n.d.; Chevron, 1982.

<sup>a</sup> Chevron short-term values are the first maximum.







TABLE 2.2-4

Preliminary Estimated Pollutant Concentrations  
in Rural Mesa County (micrograms per cubic meter)

Pollutant	Annual <sup>a/</sup> Mean	Quarterly Mean	2nd 24-hr Max	2nd 8-hr Max	2nd 3-hr Max	2nd 1-hr Max
Carbon Monoxide	-	-	-	-	-	-
Lead	-	-	-	-	-	-
Nitrogen Dioxide	-	-	-	-	-	-
Oxidants (Ozone)	-	-	-	-	-	-
Sulfur Dioxide	-	-	-	-	-	-
Total Suspended Particulates	-	-	-	-	-	-

Source: Colorado Department of Health, 1983

<sup>a/</sup> Nitrogen dioxide and sulfur dioxide values are arithmetic means.  
Total suspended particulates value is geometric mean.

NOTE: Values are conservative indicators of ambient concentrations developed for internal use by the Colorado Air Pollution Control Division and should not necessarily substitute for on-site monitoring data. The values (particularly TSP) indicate the ambient pollution levels in general geographic areas, not a specific location. Values are subject to change as new data are required.







## REFERENCES

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## 3.3 SOILS

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- A2.3-1. Soils in the Grand Junction Resource Area  
(see 2.3 Soils Inventory, Appendix A)

## OVERLAYS

- S02.3-1. Soils in the Grand Junction Resource Area  
(see Soils Inventory Overlays)  
S02.3-2. Erosion Condition and Sediment Yield  
(see Soils Inventory Overlays)







### 3.3 SOILS

#### RESOURCE AREA PROFILE

##### INTRODUCTION

The Grand Junction Resource Area's soils are described in three separate inventories conducted by the USDA Soil Conservation Service. The Grand Junction Area, Colorado, November 1955 inventory primarily covered the irrigated portions of the Grand Valley from Palisade to the Utah-Colorado border between the Redlands and the Highline Canal. Mesa County Area, Colorado, published in February 1978 inventoried additional private and public lands within the county. Remaining BLM lands--including Book Cliffs, Douglas Plateau, De Beque, Parachute and Collbran areas--have been inventoried through a cooperative agreement with the Soil Conservation Service.

Soils information for the resource area exists as published soil surveys and on 1:24,000 scale black and white, quad size photos in the Douglas-Plateau Soil Survey Area. A comprehensive soils overlay (1/2 inch per mile) has also been compiled for the entire resource area (Soils Inventory Overlay S02.3-1). Maps, interpretations for each map unit (Table A2.3-1, Soils Inventory), and a general description of the soils in each resource area capability unit are available in the Grand Junction Resource Area and District offices.

##### SOILS DESCRIPTIONS

Soils in the higher elevations in the southern part of the Glade Park area support Douglas-fir, aspen, and a variety of grasses and shrubs. They provide a diverse habitat for many species of both game and nongame mammals. Gateway-Cebone-Bangston soils (48) produce merchantable timber; Miracle-Splitro (27) and Mayflower-Skyway soils (26), produce abundant forage for livestock and wildlife. Palma-Potts (32) and Batterson-Rock outcrop (4) characterize the more rolling benches, mesa tops and sideslopes that extend to within a mile or so of the Colorado River. A pinyon and juniper overstory is predominate. The area adjacent to the Colorado River is primarily Rockland-Rock outcrop (35) and has small inclusions of Palma-Potts soils. The Black Ridge Wilderness Study Area and its complex of canyons and arches is within map unit 35.







On the Kannah Creek Area, soils have been strongly influenced in their development by basaltic slopewash from the Grand Mesa and by shale deposits between the Mesa and the Gunnison River. Soils are usually stony (particularly in the surface) and are either forming in Mancos shale or overlying it. Salt Desert shrubs and grasses are the dominate vegetation; scattered juniper occurs in the unit, with some fairly extensive stands on the footslopes of the Mesa. Utaline stony loam (44), Utaline-Shale outcrop (43) and Stony Land (37) are characteristic soil associations in this area. High stone and cobble content and shale outcrop are major factors limiting production and use.

The Batterson-Rock outcrop (4) and Rockland-Rock outcrop (35) associations characterize the Dominguez area. Inclusions of Gibbler-Witt (17) and Lazear-Rock outcrop (25) also occur. Pinyon, juniper, and sage are major components of the vegetative cover. Sandstone and shale are parent materials for soil formation, and the steeply sloping outcrops and canyon/mesa sideslopes have relatively high erosion rates. A high percentage of very shallow soils and bedrock exposures would limit productivity of the area.

Stands of ponderosa pine and pinyon cover a relatively large acreage in the Gateway area, particularly in the vicinity of John Brown Canyon and on the higher benches of Dolores Point. These stands are growing on shallow to moderately-deep soils within the Rockland-Rock outcrop association (35). Soils of the Gibbler-Witt (17) and Palma-Potts (32) associations support sage, grasses, and forbs in the more open, park-like areas. Commercial sales of pinyon and ponderosa pine have taken place. The Miracle-Splitro association (27) is at higher elevations on more north-facing slopes. These soils have a high potential for forage production. Bedrock exposures of the uranium-bearing Morrison Formation are included in association 35. Unit 35 is easily eroded and contributes large quantities of sediment during thunderstorms and spring runoff, closing roads and ditches with sediment. Much of the area has a very high erosion susceptibility and is in poor erosion condition. The erosion is primarily geologic in nature, and little can be done to alleviate the problem.

In the Mount Garfield area, Badland (2), the heavier-textured soils of Billings (5) and Chipeta-Persayo (9), and the Torriorthents-Rock outcrop (38) associations are characteristic soils and land types which extend northwards to the toeslopes and face of the Book Cliffs. Erosion rates are high, and soil loss/sediment yield problems are extensive. In contrast, are the Tosca soils (39) on north-facing sideslopes behind the Book Cliffs. These soils produce stands of Douglas-fir. The steep slopes and high erosion susceptibility limit logging operations. Much of the remaining area (excluding the Salt Canyon bottomland) is covered by brush species that increase in density with higher elevations. Soils in these areas include the Detra-Fughes-Grail (12) association.

South of the Book Cliffs and west of Mount Garfield, soils are typified by the Billings (5), Chipeta-Persayo (9), and Badland (2) associations. These soils are highly susceptible to erosion and contribute correspondingly to sediment yield. The soils in the northern portion of this area developed in residual Green River shale and in alluvium. The Detra-Fughes-Grail soils (12) are







especially susceptible to mass slumping when road and pipeline construction cuts are made in sideslopes or toeslopes. For this reason, the Douglas Pass area is an area of critical environmental concern (ACEC). Soils in map unit 12 and the Irigul-Parachute-Rhone (24) association (on the near ridge tops) have high potentials for vegetative production. The Utso-Rock outcrop association (45) is well-suited for Douglas-fir production; however, steep slopes and bedrock exposures limit access and logging.

Irigul-Parachute-Rhone soils (24) characterize the intercanion ridge tops in the northern part of the De Beque area. High forage production for livestock and wildlife in this area is due to elevation and precipitation. Erosion susceptibility, however, is high, and areas of surface disturbance should be revegetated or stabilized as soon as possible. Below the ridges, steep sideslopes produce Douglas-fir on the Tosca (39) and Utso-Rock outcrop (45) associations. Nihill-Rock outcrop (29) occurs as the familiar Green River shale canion sideslopes. High erosion susceptibility and sediment yield are typical for these soils.

Extensive areas of the lower foothills, breaks, and valley bottoms have moderately-deep to deep, more clayey textures soils supporting greasewood, rabbitbrush, or sage.

Soil map units are Dominguez (14) and Badlands (2), which are strongly influenced in characteristics by Wasatch shale and sandstone; Potts (34); Nihill very channery loam (30) in Green River alluvium; and Torriorthents-Rock outcrops (38). Many of the soils are saline or alkaline and erode easily. Potential productivity is also limited by these factors.

The southeastern portion of this unit contains soils developing in basalt-Clapper very stony loam (10)--and on sandstone, such as Travessilla-Rock outcrop (40). Scattered juniper and pinyon are most noticeable, and potential productivity is low.

Two general groupings of soils occur in the area southeast of De Beque. On the public lands north of Plateau Creek and west of Kimball Creek, soils consist of Torriorthents-Rock outcrop (38), Potts (34), Dominguez (14), and Travessilla-Rock outcrop (40). Vegetative production is limited by soil characteristics such as salinity, alkali, or shallow depth. Erosion susceptibility and sediment yield is high. A large percentage of the area south of Plateau Creek and east of Mesa also has similar soils and land types.

The remainder of the area is characterized by deep, darker colored, and heavy textured soils, with a dense brush cover. These soils have a high potential productivity. Erosion and slumping potential is high. Soil map units are Argiborolls (53), Fughes (52), and the Argiboroll component of the Calciboroll-Argiboroll soil association (50).







## EROSION CONDITION AND TREND

Erosion rates for soils in the Grand Junction Resource Area are highly variable. Depending on the rate and the consequences of soil loss or movement, erosion condition classes are assigned to areas within each capability unit. These classes range from stable to severe (BLM Manual 7317--Erosion), and management is designed to improve or maintain any given class. Stream banks (permanent and intermittent) and gullied areas are generally in the severe erosion condition class. These areas are actively eroding and are a source of high sediment production. All areas have this problem. Geologic erosion also contributes largely to sediment loads, but very little can be done through management to reduce sediment yield from this source.

Erosional losses of soil materials that become sediment deposits or bedload in streams drainages, ditches and waterholding facilities are responsible for much of the cost of maintenance, and to costs for water treatment for domestic consumption. Loss of soil productivity in source areas is also a long-term cost in terms of reduced forage production and habitat.

Overlay S02.3-2 shows erosion conditions and sediment yield for the resource area.

## EXISTING MANAGEMENT SITUATION

Current management includes consideration of soil capabilities before any resource plan or action is implemented. Recommendations or stipulations are made that protect the soil from adverse increases in erosion, enhance the soils ability to support specific activities, or delete/restrict the use of fragile or unsuitable soils.

## CAPABILITY ANALYSIS

### DEFINITION OF RESOURCE CAPABILITY LEVELS

Resource capability levels (RCLs were not established for soils because soils will be managed in terms of the compatibility of a proposed use with the soils capability to support that use. Soils will not be managed at any other level. For this reason, Capability Analysis Form 1 (Appendix A) lists no RCLs.







## MANAGEMENT PRACTICES

Because RCLs were not defined on Capability Analysis Forms 1, soils management within RCLs could not be described on Capability Analysis Forms 2 (Appendix B).

Management of the soils will depend on what is proposed by others. Moreover, the capability of the soils will determine the feasibility of a proposal. Soils Inventory overlays S02.3-1 and S02.3-2 will be used to determine soil capabilities.

## DESCRIPTION OF RESOURCE CAPABILITY LEVELS

Because RCLs could not be defined and mapped, RCLs could not be described on Capability Analysis Forms 3 (Appendix C).







CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Soils Specialist Name T. Barnston  
Date 10-15-81

Resource Capability Level 1 (Define the highest priority for management)

The highest priority is to insure that all soils - particularly those with high erosion susceptibility - are utilized within their capabilities. The objective would be to reduce erosion and sediment yield, maintain and enhance soil productivity, and thereby avoid soil and resource loss.

APPENDIX A

CAPABILITY ANALYSIS FORMS 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Capability  
management

Resource Capability Level 2 (Define the third highest priority for management)







CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Soils Specialist Name T. Bargsten  
Date 10-26-83

Resource Capability Level 1 (Define the highest priority for management)

The highest priority is to insure that all soils - particularly those with high erosion susceptibility - are utilized within their capabilities. The objective would be to reduce erosion and sediment yield, maintain and enhance soil productivity, and thereby avoid economic and resource loss.

Resource Capability Level 2 (Define the second highest priority for management)

Resource Capability Level 3 (Define the third highest priority for management)







CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Soils

Specialist Name L. Dargatzis

Date 10-25-84

Describe the types of management that you would use in SCL 1 areas

Management of the soils resource would be based on the compatibility of specific soil capabilities with proposed uses, and the implementation of management practices that provide for long-term productivity.

Surface-disturbing uses such as prescribed burning, churning, discing, road building, timber sales, and other special situations. (See Soils Overlay 62.3-2 and 62.3-3, and Soils Map 62.3-1).

APPENDIX B

CAPABILITY ANALYSIS FORMS 2  
MANAGEMENT PRACTICES

Describe the types of management you would use in SCL 2 areas

Describe the types of management you would use in SCL 3 areas







CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Soils  
Specialist Name T. Bargsten Date 10-26-83

Describe the types of management that you would use in RCL 1 areas

Management of the soils resource would be based on the compatability of specific soil capabilities with proposed uses, and the implementation of management practices that provide for long-term productivity. Surface-disturbing uses such as prescribed burning, chaining, discing, road building, timber sales, and ORVs would receive special attention. (See Soils Overlay 42.3-2 and 42.3-2, and Soils table 42.3-1).

Describe the types of management you would use in RCL 2 areas

Describe the types of management you would use in RCL 3 areas







CAPABILITY ANALYSIS FORM 3  
RESOURCE CAPABILITY LEVEL DESCRIPTIONS

Specialist Name T. Bergsten Area Number (from overlay) \_\_\_\_\_  
Resource Soils RCL (1, 2, 3) \_\_\_\_\_  
Date 10-16-87

Description of land species, number of acres, miles, etc.)

See Soils Overlay 42.2-1 and 42.2-2 and Soils Table 42.2-1.

APPENDIX C

Rationale for RCL  
CAPABILITY ANALYSIS FORMS 3  
DESCRIPTIONS OF CAPABILITY ANALYSIS LEVELS







CAPABILITY ANALYSIS FORM 3  
RESOURCE CAPABILITY LEVEL DESCRIPTIONS

Specialist Name T. Bargsten Area Number (from overlay) \_\_\_\_\_  
Resource Soils RCL (1, 2, 3) \_\_\_\_\_  
Date 10-26-83

Description of Area (Species, number of acres, miles, etc.)

See Soils Overlays 42.3-1 and 42.3-2 and Soils Table 42.3-1.

Rationale for RCL







## 3.4 WATER RESOURCES

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## APPENDIXES

- A. Capability Analysis Forms 1
- B. Capability Analysis Forms 2
- C. Capability Analysis Forms 3

\*Consists of national forest, national park, state, and private lands.







### 3.4 WATER RESOURCES

#### RESOURCE AREA PROFILE

##### DESCRIPTION OF THE RESOURCE

##### Surface Water

The Grand Junction Resource Area is drained by the Colorado River and two of its major tributaries, the Gunnison and Dolores Rivers. The Colorado River, along with two other locally important tributaries, Roan Creek and Plateau Creek, drains approximately 1.5 million acres of the resource area. The Gunnison and Dolores Rivers drain an additional 275,000 acres and 187,000 acres respectively.

Water running off the federal, state, and private lands in the resource area averages \_\_\_\_\_ acre-feet annually. Of this amount, public land contributes an estimated \_\_\_\_\_ acre-feet (Table 3.4-1).

TABLE 3.4-1  
RUNOFF IN THE GRAND JUNCTION RESOURCE AREA, BY SUB-BASIN

Sub-Basin	Watershed Area (Acres)			Annual Runoff (Acre-Feet)		
	Public Land	Other*	Total	Public Land	Other*	Total
Upper Colorado Basin			1,039,000			
Dolores River	189,000	57,000	246,000			
Gunnison River	194,000	81,000	175,000			
Roan Creek	141,000	134,000	275,000			
Plateau Creek	<u>47,000</u>	<u>140,000</u>	<u>187,000</u>			
Total			2,022,000			

\*Consists of national forest, national park, state, and private lands.







The resource area has approximately 875 miles of perennial stream channels flowing within its boundaries. Of this total, about 240 miles, or 27 percent, flow across public land.

Over two hundred springs have been identified on public land. Many more undoubtedly exist but have not yet been mapped. Seventy-four of these springs have been developed for livestock or wildlife water supplies.

Approximately four hundred stock reservoirs have been built on ephemeral drainages and 13 catchments constructed within the resource area to provide additional water supplies.

### Flood Plains

Each stream or watercourse in the resource area has its associated flood plain, but those flood plains most likely to cause damage to life or property lie mainly on private lands and are concentrated around the communities. Some flood damage could occur to roads, bridges, culverts, etc., on public land, however.

### Ground Water

The resource area has limited quantities of ground water available in both bedrock and alluvial aquifers.

There are seven bedrock aquifers within the resource area: the Wingate Sandstone, Entrada Sandstone, Salt Wash Member of the Morrison Formation, Dakota Sandstone-Burro Canyon Formation, Mesaverde Formation, Wasatch Formation, and the upper and lower aquifers of the Green River-Uinta Formations. Of these aquifers, the Wingate, Entrada, and Wasatch are the most used in the resource area, having over 80 percent of the approximately 200 known bedrock wells.

The bedrock wells are recharged primarily in the outcrop areas by precipitation, snowmelt, and streamflow percolating into the aquifers. Discharge areas are mainly springs and wells. The aquifers generally dip to the northeast off of the Uncompahgre Uplift, and this is the prevailing direction of ground water movement in the resource area. Thus, most of the ground water is carried out of the area to surface far to the north.

The yield of these aquifers varies greatly; the sandstone formations yield the most. The Wingate, Entrada and Dakota Sandstones have reported yields averaging 5 to 30 gallons per minute (gpm). The other formations have generally lower permeabilities and have reported yields of 0.5 to 15 gpm. Flowing wells have been reported in portions of the Wingate, Entrada, Dakota, and Salt Wash Member.







Alluvial aquifers, however, are the most important source of ground water in the resource area. They represent 55 percent of the approximately 410 known wells. Alluvial aquifers are associated with streams and can vary greatly in water yield and quality. They are often good sources of water and most of the shallow wells in the area are in alluvial aquifers. The aquifers are recharged chiefly by streamflow and often serve to recharge underlying bedrock aquifers. They discharge to evapotranspiration, downwards percolation, streams, and wells. The yield varies from a few gallons per minute to 300-400 gpm or more.

## CONDITION AND TREND

### Surface Water

Water quality in the resource area is generally sufficient for the purposes to which it is put. Various water quality parameters are exceeded at individual monitoring stations (see CWACOG 208 Plan), but total dissolved solids (salinity) and sediment are the parameters which are the major problems. A study by Utah State University (1975) showed that the headwaters of the main stems of the Colorado and Gunnison Rivers have total dissolved solids averaging 50-100 milligrams per liter. By their confluence at Grand Junction, dissolved solids average 580 milligrams per liter.

Salinity contributions to the Colorado River from the resource area are mainly derived from erosion of saline soils and the flow of saline springs near Gateway. The saline soils are derived from the Mancos Shale, Wasatch, and Morrison Formations. The saline soil types include Badlands, Billings, Chipeta-Persayo, Uffens, Panitchen, and Dominguez soils. They are concentrated mainly in the Grand Valley north of the Colorado River, in the lower reaches of Roan Creek, and east of the Gunnison River below the Grand Mesa. Additional smaller areas are scattered around the resource area (see Overlay WR 2.4-2).

The Grand Valley contributes the most salts. The Bureau of Reclamation estimates 400,000 tons of salt is added annually from the valley as a whole. This is in large part due to dissolution of salt in the Mancos Shale by irrigation return flows off of private lands; but the public land contributes large amounts, also. The public land's contribution is kept down mainly because of lack of water to carry the salt away. Estimates of salt yield off the desert areas in the Grand Valley range from 0.03 tons per acre per year from the flatter areas to 0.45 tons per acre per year from the steep, dissected, shale Badlands.







Salt Creek near Gateway is partially fed by highly saline springs which are a significant salinity source, also. Ground water percolating through a buried salt dome in Sinbad Valley emerges as a series of springs and enters Salt Creek, thus adding an estimated 8,900 tons of salt per year to the Dolores River.

Sediment yield production ranges from stable areas, which are usually well-vegetated, higher elevation areas, to critical or severe production areas, which are often lower elevation, south-facing slopes with sparse vegetation and highly erodible soils. Actual sediment yield is usually much less than the potential yield in these areas because of low water availability to carry sediment. Rill and gully, sheetwash, and stream bank erosion are the major contributors of sediment to streams. A few of the major sediment-producing areas, such as in Roan Creek, are related to past overgrazing. Others, such as the Mancos Shale areas, are more related to natural conditions.

The major problem areas in the resource area are Mancos Shale and Wasatch exposures in the Grand Valley, along the De Beque cutoff road and southwest of Chalk Mountain (both near Mesa), in the lower reaches of Roan Creek, and in some of the canyons north of De Beque Canyon. Other areas are Rough Canyon, south and west of the Colorado National Monument; portions of Snyder Canyon by Unaweep Canyon; Calamity and Blue Creeks near Gateway; portions of Sinbad Valley; and areas along the Dolores River near Gateway. East Salt Creek, Big Salt Wash, Dry Fork, Gibbler Gulch, Calamity Creek, and John Brown Creek also have severe streambank erosion along portions of their length.

The trend of water quality in the resource area varies from slightly improving to slightly degrading. No major areas are experiencing drastic changes, however.

Roan Creek has stable to improving quality due to improved grazing management and stable to decreased herd sizes. Oil and gas development activities have caused some increased sediment problems in a few of the tributary drainages. Oil shale development does pose a potential for serious quality degradation, however.

Plateau Creek's quality is probably declining slightly due to increased oil and gas development and housing developments with their associated septic systems. Additionally, continued increases in withdrawal of high quality water from the Grand Mesa to use in the Grand Valley causes poorer quality water downstream because the poorer quality downstream waters are not diluted by the better quality waters from the Grand Mesa.

The Gunnison River and Dolores River drainages are generally stable in water quality. No major development is occurring to cause degradation; and, conversely, no major efforts to improve water quality is occurring at this time.

Water quality in the Grand Valley and Glade Park area is probably declining somewhat due to increased development and off-road vehicle use.







Water quality in the Colorado River, as a whole, is declining. This decline is mostly due to increases in sediment and salinity. This increase is due to increasing development causing higher salt and sediment loads and, second, withdrawals of relatively high quality water in the headwater areas cause lower dilution of poorer quality downstream waters.

## Ground Water

Water quality is generally suitable for most uses, with some exceptions in the bedrock aquifers. The Dakota Sandstone-Burro Canyon Formation does have some reported poor quality saline waters in portions of the aquifer, due to its marine origins. Also, ground water in Sinbad Valley near Gateway percolates through a buried salt dome and discharges through a series of springs as very saline water. No other significant ground water problems have been reported.

In the alluvial aquifers quality varies generally reflecting the surface water quality. Some alluvial aquifers, such as Big Salt Wash near Fruita, do exceed state standards for various uses, particularly for drinking water. Surface streams which have quality problems are likely to have their associated alluvial aquifer with quality problems.

The trend of water quality is generally stable with some exceptions. Increased domestic use in the Glade Park and Collbran areas has probably deteriorated those aquifers to some degree. Also, oil shale development in the De Beque area could cause large-scale disruptions in the Green River aquifers and possibly some quality problems in the Wasatch Formation which underlies the Green River.

## EXISTING MANAGEMENT SITUATION

### CURRENT MANAGEMENT

The resource area must abide by many federal, state, and local laws and regulations governing water management. State water quality standards have been set that incorporate those suggested at the local level in the Associated Governments of Northwest Colorado 208 Plan. By not permitting Bureau management practices to degrade water quality below these classification standards, the Bureau also complies with the water quality provisions of the Clean Water Act and Federal Water Pollution Control Act. Management of flood plains must comply with Executive Order 11988, "Flood Plain Management." For a more complete listing of the applicable federal legislation, see Appendix B in the "Grand Junction District Water Resources Program," available in the resource area office.







## Surface Water

Surface water resources in the resource area are presently monitored to some extent. The BLM maintains three continuous recording rain gages and associated snow courses. The U.S. Geological Survey maintains 11 stream flow gages and some water quality monitoring stations on major streams. Additionally, water quality sampling has been done on 24 perennial streams for the past three years by the BLM. A few intermittent streams have been sampled on an irregular basis.

A reconnaissance inventory of over 200 developed and undeveloped springs in the resource area has been completed. Many of the stock reservoirs were also inventoried.

The resource area has made some limited efforts to reduce salinity and sediment yields from the Grand Valley to the Colorado River. During the 1960's, many runoff control structures (e.g., check dams, contour furrows, water spreaders, etc.) were installed in the Indian Wash watershed, an ephemeral stream in the valley, for flood and sediment control purposes. These structures served to contain the runoff and sediment produced from the land. Other structures were put in the watersheds of Leach Creek, Persigo Wash, and other streams west across the valley and north of the river as far as East Salt Creek. Because sediment from the Grand Valley is generally very saline, these structures also served to keep salt from entering the Colorado River. More recent efforts by the resource area have been aimed at keeping salinity derived from Leach Creek out of the river by means of runoff control structures. Other areas are also planned for salinity control.

Support is given to the range, wildlife, and recreation programs in developing needed drinking water supplies.

## Ground Water

Management of ground water is limited mainly to reviewing proposed actions affecting the ground water resources under the public land and implementing mitigation measures, if needed, to protect both quality and quantity of the resource. These proposed actions range from ranchers drilling a stock well to major mining projects.

The BLM has drilled a few stock wells in support of the range program, also.







## Water Rights

During the general water right adjudication in Water Division 4, 5, and 6 in 1972, the Grand Junction Resource Area entered reserved rights claims to 124 springs. These have subsequently been granted with the stipulation that the filings be quantified as to livestock and human use. Other water sources (e.g., springs and wells) filed for since 1972 have sought appropriative rights as now required by state law.

In addition to filing for new water rights, the resource area also protects its existing water rights from claims by others. Monthly water right filings in Water Divisions 4 and 5 are reviewed, and those few which, if granted, would be detrimental to the Bureau's existing water rights are opposed.

## SUPPLY-DEMAND ANALYSIS AND DEPENDENCY

In the Colorado River Basin, water is usually in short supply,. Therefore, high quality water produced on public lands in the resource area is very important both locally and basin-wide. Approximately \_\_\_\_\_ acre-feet of water runs off the public lands annually. Since the Bureau is not a large consumptive water user, this water is available for use by others.

In the Grand Junction Resource Area, most of the water traditionally has been used for farming and ranching.

Surface water is used for domestic, municipal (16,000 acre-feet per year), industrial, livestock, and wildlife purposes. Minor quantities are used for fish culture and recreation. Ground water, chiefly used for domestic purposes, also is used for livestock and irrigation.

The communities within the resource area get their municipal water supplies from a combination of private and public land sources, utilizing both surface and ground water. Mesa, Molina, Plateau City, Collbran, and Gateway get their water from springs or wells on private land. De Beque and Clifton pump directly from the Colorado River. The others use water from the Grand Mesa or on Glade Park, primarily from Forest Service land.

Fruita has their municipal watershed on the Grand Mesa National Forest on Glade Park. They collect water from a system of reservoirs and direct pumping stations and pipe it to town. Little, if any, water is obtained from public land.

Grand Junction uses the watershed of Kannah Creek on the national forest for their municipal supply. They have numerous reservoirs and direct flow rights. Again, very little water is obtained from public land. The public land does have flow lines crossing it, and a few large reservoirs like Juniata and Hallenbeck lie partly on public land.







Whitewater obtains its water off the Grand Junction flow lines.

Palisade has the Rapid Creek watershed as their municipal supply. Public lands are in the watershed, but water off the private land and springs fed from Forest Service land are more important sources. Some of the reservoirs are wholly or partially on public land.

Ute Water serves most of the Grand Valley, except for Palisade, Fruita, Clifton, and part of Grand Junction. They obtain their water supply off the Grand Mesa from the Bureau of Reclamation (Cottonwood-Bonham Storage Project), and from direct pumping from Coon, Mesa, and Plateau Creeks. Emergency supplies can be pumped from the Colorado River.

Present use for irrigation will probably increasingly shift toward industrial and municipal use as population increases and oil shale development proceeds. Thus, there will be heavier competition for available supplies, and quality problems may increase.

New demands for increased municipal and domestic supplies, along with more industrial uses for oil shale, coal, etc., are causing increased conflicts already between competing uses. Available water supplies are largely appropriated; therefore, industrial and municipal interests often must buy existing agricultural water rights to supply their needs. Thus, high quality water is in great demand.

Salinity derived from public lands is also of great importance. Salt in the Colorado River is a basin-wide problem and is the subject of an international treaty with Mexico. Excessive salt in the river causes decreased crop yields when used for irrigation, and higher treatment costs for industries and municipalities. Thus, the Bureau's management practices should try to reduce salt loads to the Colorado River to the maximum extent practicable.

The local economy is very dependent upon the water flowing off of the Forest Service and BLM land for two main reasons. One reason is because the majority of the runoff originates on federal lands, especially the high elevation national forest areas. The second reason is that the government is not a large consumptive user of water, so most of this water is available for appropriation. Under Colorado state law, however, land ownership does not imply ownership of the water flowing off the land. Therefore, from a strict legal viewpoint, the BLM is just another landowner. The first person to put the water to a beneficial use owns that amount of water he uses. From this legal viewpoint, dependency on public lands is limited to our role as a largely nonconsumptive water user.







## CAPABILITY ANALYSIS

### DEFINITIONS OF RESOURCE CAPABILITY

See Appendix A, Capability Analysis Forms 1

### MANAGEMENT PRACTICES

See Appendix B, Capability Analysis Forms 2

### DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

See Appendix C, Capability Analysis Forms 3

## REFERENCES

Colorado West Area 208 Plan. 1979. Final Main Report. Colorado West Area Council of Governments.

Colorado River - Regional Assessment Study. 1975. Utah State University, Utah Water Research Laboratory, Logan, Utah.







CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Surface water APPENDIX A Water Quality Management

Date November DEFINITIONS OF RESOURCE CAPABILITY LEVELS  
CAPABILITY ANALYSIS FORMS !

Resource Capability Level 1 (Define the highest priority for management)

Areas contributing high levels of sediment and/or salinity to the Colorado River.

This includes developed watersheds contributing high levels of sediment and salt, as well as areas where geology causes the sediment and salt problems.

Actively eroding channels are included here.

100-year flood plains: especially in those areas with high development potential.

Municipal watersheds.

Resource Capability Level 2 (Define the second highest priority for management)

Areas exhibiting water quality problems other than sediment or salinity.

Areas with potential to contribute high levels of salinity and sediment, but are presently contributing only moderate amounts.

Resource Capability Level 3 (Define the third highest priority for management)







CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Surface Water Specialist Name Howard Trussell

Date November 4, 1983

Resource Capability Level 1 (Define the highest priority for management)

Areas contributing high levels of sediment and/or salinity to the Colorado River.

- This includes degraded watersheds contributing high levels of sediment and salt, as well as areas whose geology causes the sediment and salt problems.

Actively eroding channels are included here.

100-year flood plains: especially in those areas with high development potential.

Municipal watersheds.

Resource Capability Level 2 (Define the second highest priority for management)

Areas exhibiting water quality problems other than sediment or salinity.

Areas with potential to contribute high levels of salinity and sediment, but are presently contributing only moderate amounts.

Resource Capability Level 3 (Define the third highest priority for management)







CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Ground Water Specialist Name Howard Trussell

Date November 4, 1983

Resource Capability Level 1 (Define the highest priority for management)

Areas with potential or proposed mining projects that will impact ground water resources. This includes coal and oil shale.

Resource Capability Level 2 (Define the second highest priority for management)

Resource Capability Level 3 (Define the third highest priority for management)







CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name

Surface Water

Specialist Name

Howard T.

## APPENDIX B

Date

November 8, 1983

MANAGEMENT PRACTICES  
CAPABILITY ANALYSIS FORMS 2

Describe the type of area or resource being analyzed

Municipal wastewater - Contained sewage treatment, including restrictions on access to ponds and wetlands. Wastewater treatment is largely leaving the area alone except for the water resource. Grazing is permitted, but strict enforcement is needed to prevent overgrazing.

100-year flood plains - Relatively flat areas with high development potential. Steer development away from these areas by means of FEMA grants and other permitting processes. If development is unavoidable, ensure adequate mitigation measures are taken.

Areas contributing high levels of sediment and siltation - Structural controls including retention dams, check dams, riprap, contour furrows and trenches. water resources could be used to control erosion and its associated loss of soil and sediment (e.g., riprap). Limiting off-road vehicle use on existing roads, or even allowing a cattle drive, can also help to decrease sediment yield (erosion). Grazing management is also very important. Fencing, water projects to rehabilitate wet, changing nature of use, length of use, number of AUMs, deferred vegetation systems can all help to encourage vegetation. Rehabilitation in wet areas might be practical. Vegetation helps to make areas more resistant to erosion.

Active grazing channels can be helped by various means such as bank stabilization efforts, reducing flow with fences and berms, riprapping, or water resources to cut down the flow volume.

Potential projects which might cause watershed degradation should be looked at to avoid or reduce watershed degradation. Appropriate mitigation measures should be implemented to prevent damage. This should especially include grazing of roads and drill pits for mineral exploration.







CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name Surface WaterSpecialist Name Howard Trussell Date November 8, 1983Describe the types of management that you would use in RCL 1 areas

Municipal watersheds - continue present management, including restricting access to horse and foot travel. Present management is largely leaving the area alone except for the water company. Grazing is permitted, but strict enforcement is needed to prevent overgrazing.

100-year flood plains - delineate in areas with high development potential. Steer development away from these areas by means of ROW grants and other permitting processes. If development is unavoidable, ensure adequate mitigation measures are taken.

Areas contributing high levels of salinity and sediment - structural controls including retention dams, check dams, pitting, contour furrows and trenches, water spreaders could all be used to prevent runoff and its associate loads of salt and sediment (e.g., Indian Wash). Limiting off-road vehicles to existing roads, or even closures in certain areas, can all help to decrease sediment yield (erosion). Grazing management is also very important. Fencing, water projects to redistribute use, changing season of use, length of use, number of AUMs, deferred rest-rotation systems can all help to encourage vegetation. Revegetation in small areas might be practical. Vegetation helps to make areas more resistant toe erosion.

Actively eroding channels can be helped by various means such as bank stabilization efforts, redirecting flow with jetties and gabions, riprapping, or water spreaders to cut down the flow volume.

Potential projects which might cause watershed degradation should be looked at and appropriate mitigation measures implemented to prevent damage. This should especially include siting of roads and drill pads for mineral exploration.







Describe the types of management you would use in RCL 2 areas

For areas exhibiting water quality problems other than sediment or salinity, the source of the problem must first be identified. Is it from area geology, irrigation practices, etc.? Or, does it come from private or public lands? To do this, a monitoring plan must be set up to clarify the problem. Then, if it is found that something can be done to rectify the situation, a site-specific activity plan must be developed. Management practices will thus depend on the situation.

For areas with potential for contributing high sediment and salinity loads, but presently contribute only moderate amounts, there are several options. Grazing management and revegetation are the best recourse. Changing season of use, lowering number of AUMs, etc., can all help to increase the cover and protect against erosion. Fencing can also help, as can redistribution of grazing by adding water projects. Revegetation could be considered for small areas. Limiting off-road vehicle use to existing roads, or even closing some of the roads, would also help. Structural controls, as in RCL 1, could be feasible for small areas if the erosion warrants it.

Describe the types of management you would use in RCL 3 areas







CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Ground Water

Specialist Name Howard Trussell Date November 4, 1983

Describe the types of management that you would use in RCL 1 areas

Review all proposed projects thoroughly and make sure adequate attention is paid to appropriate mitigation measures. In areas with high potential for mineral development, siting of lease areas should take into account potential ground water problems.

Describe the types of management you would use in RCL 2 areas

Describe the types of management you would use in RCL 3 areas







3.5 GEOLGY AND GEOLOGIC HAZARDS

APPENDIX C

DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS  
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## 3.5 GEOLOGY AND GEOLOGIC HAZARDS

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## Coal

The coal resources in the area are located primarily in the Mississippian, Permian, and Triassic age. This group outcrops along the Book Cliff Escarpment, the southern extension of the Poan Plateau, and under the Grand Mesa.

## Oil and Gas

The entire resource area is very complex geologically and has numerous faults, anticlines and synclines. The varied structure and stratigraphy has been conducive to the formation of many oil and gas reservoirs. Structural and stratigraphic traps are found throughout the area.







### 3.5 GEOLOGY AND GEOLOGIC HAZARDS

#### RESOURCE AREA PROFILE

#### GEOLOGY

The Grand Junction Resource Area is located along the eastern boundary of the Colorado Plateau. Several smaller physiographic features are imposed on the plateau: the Uncompahgre Uplift, the Paradox Basin, Dolores River Syncline, Grand Valley, Roan Plateau, Piceance Creek Basin and Grand and Battlement Mesas. Most of the geologic time scale is represented in the strata of these structures. Several important minerals such as coal, oil and gas, oil shale, and uranium are found within these structures.

#### Coal

The coal resources in the area are located primarily in the Mesa Verde Group, Cretaceous age. This group outcrops along the Book Cliff Escarpment, the southern extension of the Roan Plateau, and under the Grand Mesa.

#### Oil and Gas

The entire resource area is very complex geologically and has numerous faults, anticlines and synclines. The varied structure and stratigraphy has been conducive to the formation of many oil and gas reservoirs. Structural and stratigraphic traps are found throughout the area.







All of the oil and gas in the resource area has been found in the sediments north and east of the Uncompahgre Uplift. The producing horizons in the defined known geologic structures located in the resource area are as follows:

<u>KGS</u>	<u>Producing Horizon</u>
Twin Buttes Field	Morrison, Dakota, Niobrara
South Baxter Pass Field	Morrison
South Canyon Field	Buckhorn, Morrison, Dakota
Garmesa Field	Entrada, Dakota, Morrison
Prairie Canyon Field	Dakota, Morrison
De Beque Field	Mesaverde
Hunters Canyon Field	Mesaverde
Bar X Field and Addition	Morrison, Dakota, Entrada
Buzzard Creek-Sheep Creek Field	Mesaverde
Buzzard Creek Field	Mesaverde (Cozette and Corcoran)
Roberts Canyon-Shire Gulch Field	Morrison, Dakota, Mancos
Cameo Field	Mesaverde (Cozette and Corcoran), Dakota
Asbury Creek Field	Dakota
Plateau Field	Mesaverde

## Oil Shale

The oil shale resources are in the Piceance Basin within the Eocene Green River Formation.

## Uranium/Vanadium

The uranium/vanadium are found in the Uravan Mineral Belt, a mineralized zone within the Jurassic Morrison Formation.

## Copper, Amthyst, Lead

These minerals are found within the Precambrian complex or in the overlying Triassic Chinle and Wingate Formation. Most of the mineralization occurs on the Uncompahgre although some occurs along the margin of the Sinbad Salt Dome (Paradox Basin). Mineralization has been controlled by fractures and/or faults within the formations.







## Moss Rock, Flagstone, Boulders

Moss rock and flagstone are found primarily within the Triassic Wingate and Kayenta Formations. The formations supply most of the ornamental stone for the resource area. Boulders, normally weathered basalt, are found along the drainages surrounding the Grand Mesa.

## Sand and Gravel

Sand and gravel occur as stream deposits along major drainages, as terrace deposits above existing and ancestral streams, and as alluvial fans along the Bock Cliffs.

## GEOLOGIC HAZARDS

The major areas of concern are within the Jurassic Morrison, Cretaceous Mancos Shale and Mesa Verde Group, the Eocene Wasatch and Green River Formations, and within the glacial deposits.

The Morrison, Mancos, Wasatch and Green River Formations contain shrink-swell soils that contribute to slumping and piping. When this occurs, the overlying units, particularly the Mesa Verde, lose support, resulting in rock falls.

## EXISTING MANAGEMENT SITUATION

Management of the minerals is discussed in the Minerals section of the MSA.

## CAPABILITY ANALYSIS

## DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource capability levels for minerals are presented in the Minerals section of the MSA.







## MANAGEMENT PRACTICES

Management of mineral PCLs are discussed in the Minerals section of the MSA.

## DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

Resource capability levels for minerals are presented in the Minerals section of the MSA.







## 2.1 CLIMATE

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## 3.6 MINERALS AND PALEONTOLOGICAL RESOURCES

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### 3.6 MINERALS AND PALEONTOLOGICAL RESOURCES

#### RESOURCE AREA PROFILE

#### MINERALS

##### Coal

The Dakota Formation, the Book Cliffs, and Grand Mesa Coal Fields have coal resources in the resource area. However, based on coal development potential, only the Book Cliffs and Grand Mesa Fields are considered to be economically feasible to mine.

The amount of coal present to the 3,000 foot overburden within the resource area for the Book Cliffs and Grand Mesa Fields is estimated at 4,893 million tons of measured, indicated, and inferred in approximately 371,676 acres.

The analysis of the coal beds is as follows:

##### Grand Mesa Field

Thickness	3.9-14.2 feet
Moisture	9.8-20.0%
Ash	2.1-16.11%
Sulfur	0.5-1.8%
Btu/lb. (dry, ash free)	9,360-11,670
Fus. temp., °F	2,060-2,970

##### Book Cliffs Field

##### Anchor Tongue

Thickness	6 feet
Moisture	8.2-9.8%
Ash	5.9-9.8%
Sulfur	1.0-1.7%
Btu/lb. (dry, ash free)	11,910-12,330
Fus. temp., °F	2,190-2,790





### Palisade Bed

Thickness	2.7-9.3 feet
Moisture	3.3-14.0%
Ash	4.9-17.4%
Sulfur	0.5-1.6%
Btu/lb. (dry, ash free)	10,950-13,560
Fus. temp., °F	2,130-2910+

### Carbonera Bed

Thickness	7.5-8.5 feet
Moisture	9.3-11.4%
Ash	7.2-14.4%
Sulfur	0.4-0.6%
Btu/lb. (dry, ash-free)	10,470-11,150
Fus. temp., °F	2,850

### Cameo Group

Thickness	5.5-20 feet
Moisture	5.4-11.5%
Ash	5.2-15.5%
Sulfur	0.5-1.3%
Btu/lb. (dry, ash-free)	10,410-12,460
Fus. temp., °F	2,520-2,960

(Hornbaker 1975)

### Oil and Gas

The federal government owns the federal oil and gas reserves under approximately 1,373,694 acres of public and private lands. Oil and gas are being produced north of the Colorado and Gunnison Rivers from the Entrada, Morrison, Burro Canyon, Dakota, and Mancos Formations and the Mesaverde Group.

### Oil Shale

Although vast quantities of oil shale exist within the Piceance Basin, only a small portion of that basin lies within the resource area. And most of those areas are privately owned. The oil shale is found in the Green River Formation.





Gold, Silver, Copper, Uranium, Vanadium, Gypsum, and Amethyst

Locatable minerals in the resource area include but are not limited to gold, silver, copper, uranium, vanadium, gypsum and amethyst.

Gold is found along the major drainages in the resource area, with minor amounts associated with silver in the Uncompahgre. Copper minerals have been located in Sinbad Valley and along mineralized zones in Unaweep Canyon. Amethyst has been found in association with the copper in Unaweep Canyon.

Uranium and vanadium have been deposited in the Morrison Formation in the Uravan Mineral Belt in the Gateway area. Gypsum, in the form of alabaster, is a bedded deposit in the Moenkopi Formation in the Gateway area.

Moss Rock, Bentonitic Clays, Flagstone, Sand, and Gravel

Bentonite is an expandable clay found in the Morrison Formation south of the Colorado River in the Grand Valley. Moss rock and flagstone can be extracted from primarily the Wingate and Kayenta Formations on the Uncompahgre Plateau, while sand and gravel is located along the major drainages and as alluvium north of the Colorado River in the Grand Valley. Basalt is found on slopes below the Grand Mesa.

## PALEONTOLOGY

Fossils occur in many of the geologic formations within the resource area. These formations have been classified to indicate the likelihood of significant (vertebrate fossils of scientific interest) fossil occurrence. Table 3.6-1 shows formations and acres within each class.





TABLE 3.6-1  
FORMATIONS WITHIN THE RESOURCE AREA

Class	Formations	Acres
IA:	60 sites (includes portions of the Moenkopi, Wingate, Morrison, Burro Canyon, Hunter Canyon and Wasatch Formations.)	
IB:	Morrison Formation Wasatch Formation	433,760 acres
II:	Hermosa Formation Burro Canyon Formation Dakota Formation Mancos Shale Mount Garfield Formation Green River Formation	861,569 acres
III:	Precambrian Rico Formation Cutler Formation Moenkopi Formation Chinle Formation Wingate Sandstone Kayenta Formation Navajo Sandstone Carmel Formation Entrada Sandstone Summerville Formation Sego Sandstone Hunter Canyon Formation Ohio Creek Conglomerate Pliocene Basalt Flows Quaternary Deposits	844,764 acres







Two important Class IA sites are located in the Morrison formations. These are the Rabbit Valley Site and the Fruita Paleo Site.

## EXISTING MANAGEMENT SITUATION

### MINERALS

Minerals fall into three categories for management by the Bureau of Land Management. These are leasables, locatables, and salables.

Leasables in this resource area are coal and oil and gas. An individual or company can lease these minerals. The lessee pays a rental and royalty for the mineral estate. However, the mineral estate is retained by the federal government.

Locatables are minerals such as gold, silver, copper, and uranium. These can be extracted from public land by staking and filing a mining claim. A mining claim gives the claimant a property right to that land; the claim can be patented, and ownership passes from the federal government.

Salables include, but are not limited to, moss rock, flagstone, sand and gravel, and bentonite. The materials can be disposed of by free use, usually to other government agencies, or by sale.

#### Leasables

a. Coal. Seventeen coal leases covering 41,391 acres have been issued in the resource area. These leases are located in the Book Cliffs and Grand Mesa Coal Fields.

Only one lease is now producing. Powderhorn Coal Company, the lessee, mined approximately 929,000 tons in 1982 from its mine in De Beque Canyon. This is a typical production figure.

The demand for federal leases is expected to increase. Informal expressions of interest have been received for the 1987 coal lease sale.

The Book Cliffs and Grand Mesa Fields, excluding existing coal leases, will be evaluated during the planning process for suitability for leasing. Areas considered suitable will be included in the next Uinta-Southwestern Utah Coal Region Sale.







b. Oil and Gas. Oil and gas is managed according to the oil and gas environmental assessment. The four leasing categories, with acreage, are as follows:

<u>Category</u>	<u>Acres</u>
No leasing WSAs	
No surface occupancy	
Special stipulations	
Standard stipulations	

There are forty-seven defined Known Geologic Structures (KGSs) in the resource area; 1,082,707 acres of public lands are leased for oil and gas.

In 1981, oil production was 10,389 BBL in Mesa County and 9,033 BBL in Garfield County. During that same year, gas production was 4,684,431 MCF in Mesa County and 8,878,977 MCF in Garfield County. Seventy-five applications for permit to drill (APDs) were received in 1983.

The estimated reserves are over \_\_\_\_\_ of natural gas within the \_\_\_\_\_.

c. AEC Uranium. The BLM manages the surface on four Atomic Energy Commission (AEC) uranium/vanadium leases in the Gateway area. Although uranium and vanadium are usually locatables, the AEC leased these areas specifically for the development of uranium and vanadium.

The leases have produced a total of 91,694 pound of uranium oxide, average grade of .251 percent, and 395,000 pounds of vanadium oxide, average percent grade of 1.22. Only one lease is now operating.

Although these leases are within the Grand Junction Resource Area, because of location and the number of AEC leases, the Montrose District manages the surface.

d. Oil Shale. The Grand Junction District is not considering leasing of oil shale lands within its boundary at this time. The primary involvement is the issuance of rights-of-ways, exchanges, and sales for private oil shale development. The companies involved in private development are Chevron, Mobil, Pacific, Getty-Cities Services, and Union Oil-Gary Western.







## Locatables

Locatable minerals within the resource area include, but are not limited to, gold, silver, amethyst, copper, uranium, vanadium, quartz, calcite, fluorite, barite, galena, zinc, and molybdenum.

A mining claimant may enter public lands not withdrawn from locatable mineral entry to prospect for and develop those minerals. There are \_\_\_\_\_ acres closed to location within the resource area.

More than 53 percent of all the sections containing mining claims are located in the Gateway area, primarily for uranium and vanadium. The oil shale area north of De Beque contains 24 percent of the sections located for pre-1920 oil shale claims. Approximately 10 percent of all other claims are located along the major river corridors. The remaining 13 percent are scattered throughout the resource area.

## Mineral Material (Salables)

The disposal of mineral material, which includes but is not limited to moss rock, flagstone, common bentonite, and boulders, is by competitive and noncompetitive sale, and by free use.

During fiscal year 1983, BLM held no competitive sales but had 9 noncompetitive sales and issued 16 on-going free use permits. The noncompetitive sales were for 8 cubic yards of gravel, 23 tons of common bentonite, and 89 tons of decorative stone. The free use permits authorized the removal of 1,129,500 cubic yards of sand and gravel (620,000 cubic yards from the Mount Garfield Capability Unit and 395,000 cubic yards from the Baxter-Douglas Capability Unit).

Salable minerals are presently sold from nine common use area locations:

T.12S., R.100W., 6th P.M.	Bentonite
T.14S., R.100W., 6th P.M.	Flagstone and Moss Rock
T.8S., R.101W., 6th P.M.	Red Gravel
T.1N., R.3W., Ute P.M.	Gravel
T.8S., R.98W., 6th P.M.	Moss Rock
T.3S., R.2E., Ute P.M.	Basalt





MANAGEMENT PRACTICES  
PALEONTOLOGY

The Grand Junction Resource Area has been inventoried and classified according to the following criteria:

- Class IA: Significant fossils have been identified on the ground.
- Class IB: Areas that are known or are likely to produce significant fossils that are vulnerable to surface-disturbing activities.
- Class II: Areas that show evidence of fossils but are unlikely to produce significant fossils.
- Class III: Areas that are unlikely to produce fossils of any kind.

These classifications determine the procedures to be followed prior to the granting of a paleontological clearance to proceed with a project. Class IA areas have mitigation measures taken to protect the fossils; Class IB areas are surveyed prior to surface disturbing activities; Classes II and III do not. However, mitigation measures are taken to protect any significant fossil found in any formation.

CAPABILITY ANALYSIS

DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Minerals

See Appendix A, CA Forms 1

Paleontology

See Appendix A, CA Form 1





## MANAGEMENT PRACTICES

### Minerals

See Appendix B, CA Forms 2

### Paleontology

See Appendix B, CA Forms 2

## DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

### Minerals

See Appendix C, CA Forms 3

### Paleontology

See Appendix C, CA Forms 3





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource: Minerals-locatable      Specialized Uses-Subsidence

Date: 11/4/81      APPENDIX A  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS  
CA FORMS 1

Resource Capability Level 1 (Define the highest priority for management)

Area within the Morrison Formation in the Denver Mineral Belt, within the Fort Collins City limits, and the area within the Platte River valley.

Resource Capability Level 2 (Define the second highest priority for management)

Remainder of the resource area.

Resource Capability Level 3 (Define the third highest priority for management)





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Minerals-Locatables Specialist Name McReynolds

Date 11/4/83

Resource Capability Level 1 (Define the highest priority for management)

Areas within the Morrison Formation in the Uravan Mineral Belt, within the Precambrian Chinle Wingate contact on the Uncompahgre, and the oil shale placer claims within the Piceance Creek Basin.

Resource Capability Level 2 (Define the second highest priority for management)

Remainder of the resource area.

Resource Capability Level 3 (Define the third highest priority for management)





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Minerals-Coal Specialist Name McReynolds

Date 11/4/83

Resource Capability Level 1 (Define the highest priority for management)

The coal bearing units within the Book Cliffs and Grand Mesa Coal Fields to the 3000 foot overburden.

Resource Capability Level 2 (Define the second highest priority for management)

The coal bearing units within the Book Cliffs and Grand Mesa to the 6000 foot overburden.

Resource Capability Level 3 (Define the third highest priority for management)

The coal bearing units within the Dakota Formation to the 3000 foot overburden.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Minerals-Oil and Gas Specialist Name McReynolds

Date 11/7/83

Resource Capability Level 1 (Define the highest priority for management)

Known Geologic Structures.

Resource Capability Level 2 (Define the second highest priority for management)

Areas that are prospectively valuable for oil and gas, with special emphasis north of the Colorado and Gunnison Rivers.

Resource Capability Level 3 (Define the third highest priority for management)

Remainder of the resource area.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Minerals-Salables Specialist Name McReynolds

Date 11/7/83

Resource Capability Level 1 (Define the highest priority for management)

The common use and free use areas for disposal of mineral materials.

Resource Capability Level 2 (Define the second highest priority for management)

Alluvium - primarily north of the Colorado River.

Resource Capability Level 3 (Define the third highest priority for management)

Remainder of the resource area.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Minerals-Paleontology Specialist Name McReynolds

Date 11/7/83

Resource Capability Level 1 (Define the highest priority for management)

Class I areas and the Rabbit Valley Site.

Resource Capability Level 2 (Define the second highest priority for management)

Class II areas.

Resource Capability Level 3 (Define the third highest priority for management)

Class III areas.





APPENDIX B  
MANAGEMENT PRACTICES  
CA FORMS 2

Resource Name Minerals

Specialist Name McPherson

Date 11/4/83

Describe the types of management that you would use in SCI 1 areas

All mining claims are considered valid. The state has the right to regulate mining activities and to ensure that the state's interests are protected. The state also has the right to regulate the use of land and to ensure that the state's interests are protected. This is managed under the state's laws.

Describe the types of management you would use in SCI 2 areas

See SCI 1 narrative.

Describe the types of management you would use in SCI 3 areas





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Minerals-Locatables

Specialist Name McReynolds Date 11/4/83

Describe the types of management that you would use in RCL 1 areas

All mining claims are considered valid. This gives the claimant certain rights and responsibilities, among these the right to develop the claim while ensuring that the development does not produce unnecessary and undue degradation. This is managed under 43 CFR 3809.

Describe the types of management you would use in RCL 2 areas

See RCL 1 narrative.

Describe the types of management you would use in RCL 3 areas





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Minerals-Coal

Specialist Name McReynolds Date 11/4/83

Describe the types of management that you would use in RCL 1 areas

Coal unsuitability will be applied to these areas to determine which areas will continue to go through the leasing process.

Describe the types of management you would use in RCL 2 areas

These areas will not be considered for inclusion in the leasing process.

Describe the types of management you would use in RCL 3 areas

See RCL 2 narrative.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Minerals-Oil and Gas

Specialist Name McReynolds Date 11/8/83

Describe the types of management that you would use in RCL 1 areas

Leave areas open for leasing; these areas are leased competitively.

Describe the types of management you would use in RCL 2 areas

Leave areas open for leasing; these areas are leased simultaneously and over the counter.

Describe the types of management you would use in RCL 3 areas

These areas would be leased simultaneously and over the counter.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Minerals-Salable

Specialist Name McReynolds Date 11/7/83

Describe the types of management that you would use in RCL 1 areas

These areas would be monitored on a regular basis to see if quantity and quality are sufficient to meet existing and projected needs.

Describe the types of management you would use in RCL 2 areas

Inventory to identify prospective areas as existing sites become depleted.

Describe the types of management you would use in RCL 3 areas

See narrative for RCL 2.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Minerals-Paleontology

Specialist Name McReynolds Date 11/7/83

Describe the types of management that you would use in RCL 1 areas

Class I areas would be surveyed prior to surface disturbing activities. The survey may include a field check. The Rabbit Valley site would be set up as an educational site with sign.

Describe the types of management you would use in RCL 2 areas

These areas will be surveyed only when surface disturbing activities or reports indicate that significant fossils have been exposed or are outcropping.

Describe the types of management you would use in RCL 3 areas

See narrative for RCL 2





## 3.7 VEGETATION

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- 3.7-2. Riparian of Grand Junction Resource Area





### 3.7 VEGETATION

#### RESOURCE AREA PROFILE

#### VEGETATION TYPES AND CONDITION

The Grand Junction Resource Area has a great variety of botanical communities. The variety is shown in Table 3.7-1 as a list of Standard Habitat Sites (SHS). Each SHS incorporates a vegetal and topographical feature in its name. This is done because dominant plant species, when identified with certain landforms in this resource area, usually contain similar subdominant plant species and wildlife.

Vegetation condition is good, fair, or poor for livestock depending on the percentage of palatable plants in the community. For deer and elk the same is true, but the palatable plants are often different species. For birds, good condition usually refers to the amount of foliage at certain levels that makes vegetation condition good. Good watershed vegetation condition typically is more vegetation at all levels.

The Grand Junction Resource Area is building a computer data bank that will indicate the vegetation condition for livestock, wildlife, and watershed by allotment, habitat site, watershed, or capability unit. On public land, livestock range condition is considered the single most valid measure of the health of each vegetation type (Table 3.7-1) because it is the single most influential factor in creating ecological condition.

The most productive and/or the most strategically located vegetation types are the riparian ones. Table 3.7-2 lists streams of the resource area and the acres of public land in riparian vegetation. Also note the three riparian Standard Habitat Sites in Table 3.7-1.





TABLE 3.7-1  
STANDARD HABITAT SITES OF THE GRAND JUNCTION BLM RESOURCE AREA

SHS Name	Some Major Plant Species	Acres Public Land	Condition (Acres)		
			Good	Fair	Poor
Annual Flats	Cheatgrass Blue Mustard Cranesbill Burr Buttercup				
Arid Grassland Terraces	Galleta Cheatgrass Salina Wildrye Broom Snakeweed				
Mesic Grassland Highlands	Columbia Needlegrass Bluegrass Wheatgrasses Rubber Rabbitbrush				
Saltbush Eroded Lands	Nuthall's Saltbush Shadscale Salina Wildrye				
Saltbush Benches and Bajada	Shadscale Galleta Broom Snakeweed Cheatgrass				
Blackbrush Slopes and Terraces	Blackbrush Pricklypear Cactus Blue Grama				
Greasewood Uplands	Black Greasewood Cheatgrass Burr Buttercup				
Greasewood Washes	Black Greasewood Perfoliate Pepperwood Cheatgrass				
Non-Wooded Riparia	Salt Cedar Saltgrass Rush Bulrush				
Woodland Riparia	Cottonwoods Boxelder Skunkbrush Willow				





TABLE 3.7-1 (Continued)

SHS Name	Some Major Plant Species	Acres Public Land	Condition (Acres)		
			Good	Fair	Poor
Sagebrush Valleys	Big Sagebrush Cheatgrass Wheatgrasses Bluegrasses				
Sagebrush Mesas	Big Sagebrush Black Sagebrush Galleta Blue Grama				
Sagebrush	Big Sagebrush Columbia Needlegrass Lupines Gambel Oak				
Arid Pinyon-Juniper Steep Lands	Utah Juniper Pinyon Galleta True Mountain Mahogany				
Arid Juniper-Pinyon Mesas	Utah Juniper Pinyon Big Sagebrush Black Sagebrush				
Mesic Pinyon-Juniper Steep Lands	Pinyon Utah Juniper True Mountain Mahogany Serviceberry				
Mesic Pinyon-Juniper Mesas	Pinyon Utah Juniper Gambel Oak Big Sagebrush				
Mountain Shrub Valleys	Gambel Oak Sedges Saskatoon Serviceberry Snowberry				
Mountain Shrub Steep Lands	Gambel Oak Mountain Serviceberry True Mountain Mahogany Snowberry				





TABLE 3.7-1 (Continued)

SHS Name	Some Major Plant Species	Acres Public Land	Condition (Acres)		
			Good	Fair	Poor
Mountain Shrub Bench, Mesa and Ridgetop	Saskatoon Serviceberry Sedges Big Sagebrush Gambel Oak				
Aspen Glades	Quaking Aspen Mountain Snowberry Elk Sedge Aspen Peavine				
Ponderosa Pinelands	Ponderosa Pine Gambel Oak Bluegrasses Sedges				
Douglas-Fir Ridge and Valley	Douglas-Fir Snowberry Serviceberry				
White Fir Ridge and Valley	White Fir Aspen Douglas-Fir Snowberry				





TABLE 3.7-2  
RIPARIA OF THE BLM GRAND JUNCTION RESOURCE AREA

Stream Name	Flow 1	Stream Length (miles PL)	Area 2	Riparian Condition Rating 3	Stream Name	Flow 1	Stream Length (miles PL)	Area 2	Riparian Condition Rating 3
<u>GLADE PARK C.U.</u>									
East Creek	P	8.7	31.6	F	GATEWAY C.U.	P	19.4	157.6	P
Northeast Creek	P	7.5	13.6	G	Dolores River	P	1.4	8.5	G
Little Dolores River	P	8.4	35.6	P	West Creek	P	4.2	10.2	G
Bieser Creek	P	1.7	3.0	F	Ute Creek	P	2.9	7.0	G
Payne Canyon	P	0.8	1.0	P	North Lake Creek	P	1.1	4.4	G
Granite Creek	P	4.9	24.3	F	Fall Creek	P	1.3	dc	
Coates Creek	P				Fish Creek	P	0.3	S	
Blair Canyon	P	2.9	dc	P	Gill Creek	P	8.4	20.4	G-P
McKenzie Canyon	P	2.5	dc	P	Blue Creek	P	6.8	dc	F
Middle Canyon	P	.4	dc	P	Calamity Creek	P	4.9	11.9	P
Spring Creek	I	9.0	S	P	Salt Creek	P	6.3	11.4	
Bangs Canyon	I	4.6	S	P	N. Fork Mesa Creek	P	5.3	dc	F-P
West Bangs Canyon	I	4.8	S	P	John Brown Creek	I	TOTAL	238.7	
Hay Press Creek	I								
Colorado River - see Baxter-Douglas C.U.									
		TOTAL	109.1		MT. GARFIELD C.U.	P	7.7	76.2	F-P
					Big Salt Wash	I	1.2	6.4	F
					Corral Canyon		2.4	NS	
								NS	
<u>KANNAH CREEK C.U.</u>									
Gunnison River	P	7.1	86.0	G	Little Salt Wash	I	6.9	NS	F
Deer Creek	I	5.0	S	P	Adobe Creek	I	6.1	NS	P
Indian Creek	I	5.3	6.4	P	Laphan Wash	I	5.7	NS	P
Kannah Creek	P	0.7	6.4	F	N. Fork Kannah Creek		1.7	19.0	G
Hunter Canyon	I	4.4	NS	P	Leach Creek	I	4.2	NS	P
Whitewater Creek	I	3.0	3.6	P	Middle Fork	I	3.4	NS	P
		TOTAL	121.4		Highline Canal	I	11.1	NS	P
					Orchard Mesa Canal #2	I	1.9	NS	P
							TOTAL	82.6	
<u>DOMINGUEZ C.U.</u>									
Big Dominguez Creek	P	16.4	99.4	G					
Little Dominguez Creek	P	15.0	81.8	G					
East Creek - See Glade Park C.U.									
		TOTAL	181.2						





TABLE 3.7-2 Cont.

Stream Name	Flow 1	Stream Length (miles PL)	Area 2	Riparian Condition Rating 3	Stream Name	Flow 1	Stream Length (miles PL)	Area 2	Riparian Condition Rating 3
<b>BAXTER-DOUGLAS C.U.</b>									
Colorado River	P	13	1266.1	F-P	Plateau Creek	P	3.7	15.7	G-F
East Salt Creek	P	19.9	112.6	P	Leon Creek	P	0.4	4.8	G
Barrel Springs Cr.	P	3.8	dc	P	Coon Creek	P	0.3	0.7	
Right Fork	P	2.0	dc	P	Buzzard Creek				
Left Fork	P	2.8	dc	P	E. Hawhurst	P	1.3	3.2	G
Corral Canyon	P	3.0	NS	P	W. Hawhurst	P	1.1	2.7	G
Hay Canyon	P	2.6	NS	F	Collier Creek	P	0.9	NS	F
Calf Canyon	P	2.3	NS	P	Grove Creek				
Trail Canyon	P	1.0	NS	P	Spring Creek	P	1.6	NS	G
West Salt Creek	P	18	43.6	F	Oak Creek	P	0.4	NS	
South Canyon	I	6.0	S	P	Bull Creek	P	0.3	NS	G
Prairie Canyon	P	5.4	NS	P	Kimball Creek				
		TOTAL	1422.3		Dry Fork	I	1.0	NS	
					Clover Gulch	I	1.6	NS	
<b>DE BEQUE C.U.</b>									
Colorado River	P	7	174.6		East Salt Creek	I	0.4	NS	F
Roan Creek	P	7	29.7	F	Rapid Creek	P	2.7	16.3	G
Carr Creek	P	5.2	31.5	F	Cottonwood Creek	P	4.7	14.2	G
Left Fork Carr	I	3.2	13.5	F	Big Wash	I	4.7	NS	P
Brush Creek	P	2.9	12.3	F	Sand Wash	I	4.4	NS	P
Dry Fork (incl.					Horsethief Creek	I	3.7	NS	
N. Dry Fork)	P	3.8	14.4	P	Little Horsethief Creek	I	2.7	NS	
McKay Fork	I	0.79	10	P			TOTAL	57.6	
Conn Creek	P	0.3	4	P					
Kimball Creek	P	0.3	0.7	P					
Clear Creek	P	0.2	0.6	F					
Corcoran Wash	I	4.2	NS	P					
Jerry Creek	I	4.0	9.7	P					
Cottonwood Creek	I	5.3	4.2	P					
Spring Creek	I	4.7	S	P					
		TOTAL	305.2						





1 P = perennial, I = intermittent

2 Numbers in acres, dc = discontinuous, acreage calculation not productive;  
S = scattered, absent along most of stream length;  
NS = narrow and scattered

3 G = good development

F = fair

P = poor





## TRENDS IN THE VEGETATION CONDITION

Between 1870 and 1934, the year of the Taylor Grazing Act, most of the damage to the ecological condition by livestock was done. Since then the trend of livestock range condition and, therefore, ecological condition has generally been upward.

Much of the riparian type is overgrazed even in grazing allotments well below carrying capacity. Fire, both natural and man-caused, is removing the Fremont cottonwood stands at a greater rate than it is being replaced. This is happening most rapidly on the Colorado River, and this is probably because it has the most acreage to lose.

## REFERENCES CITED

Pystic and Parks. 1975. Bureau of Land Management riparian inventory.

Shinn and Smith. 1976. Colorado River riparian inventory: Loma to Stateline





## 3.8 FORESTRY

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### 3.8 FORESTRY

#### RESOURCE AREA PROFILE

##### DESCRIPTION OF RESOURCE

The Grand Junction Resource Area of the Bureau of Land Management administers 1,200,857 acres of public land, of which 575,189 acres are forested (Table 3.8-1). This includes woodlands, commercial forest lands, and noncommercial forest lands. No attempt was made to differentiate commercial and noncommercial forest lands. It was assumed to be all commercial forest lands for the purposes of the inventory; budget constraints and manpower limitations required this.

##### Woodlands

Woodlands constitute approximately 90 percent, 536,084 acres, of all forested acres (Table 1). Pinyon pine-juniper is the major forest type represented in the woodlands. Gambels oak and cottonwood are also found in much lesser amounts. No acreage figures are available for Gambels oak and cottonwood. Where appropriate, areas supporting oak and cottonwood are mentioned.

The pinyon-juniper type is found throughout the resource area in the 4800' to 7500' elevation range. Stands at the lower elevations tend to be primarily juniper while those stands at the higher elevations tend to be primarily pinyon pine. The pinyon-juniper type usually gives way to the mountain shrub type at elevations above 7500 feet.

Woodlands were classified as productive or nonproductive for management purposes based upon crown density and topography. An estimated 134,684 acres are classified as productive woodlands, suitable for management with an estimated 865,519 cords of fuelwood available for harvest. Extensive manageable stands are found throughout the resource area wherever conditions are favorable - the Book Cliffs, Pinyon Mesa and the Uncompahgre have large acreages of manageable stands. These stands vary in size from a few acres to thousands of acres. The Productive Woodlands Overlay (FR 3.8-1) shows the general location of these stands. More detailed information is found on the Grand Junction Resource Area Timber and Woodland Type Maps, which are available in the resource area office.







TABLE 3.8-1  
ACRES OF FOREST LAND RESOURCES

Capability Unit	Forest Type--Forest Land				Total	Woodlands		Capability Unit Totals
	Aspen	Douglas-Fir	Ponderosa Pine	Spruce/Fir		Pinyon-Juniper		
01 Glade Park	572	336	1,069	--	1,977	153,972		155,949
02 Kannah Creek	--	--	--	--	--	11,503		11,503
03 Dominguez	--	23	127	65	215	50,044		50,259
04 Gateway	56	137	1,139	--	1,332	108,120		109,452
05 Mt. Garfield	18	1,979	--	--	1,997	33,063		35,060
06 Baxter-Douglas	765	7,217	--	44	8,026	66,889		74,915
07 De Beque	2,634	21,361	--	418	24,413	77,566		101,979
08 Collbran	909	17	--	219	1,145	34,927		36,072
Species Total	4,954	31,070	2,335	746	39,105	536,084		575,189







Another 401,400 acres of woodlands are classified as nonproductive, unsuitable for management. This acreage is either poorly stocked and/or on steep ground, in excess of 35 percent sideslope. The majority of the woodlands in the resource area are in this category. Their general location is shown on the Nonproductive Woodlands Overlay (FR 3.8-2). The Carbonera area has extensive acreage of nonproductive woodlands. The largest stand in the resource area is in the Mee-Knowles Canyon area on Glade Park, though.

### Commercial Forest Land

The resource area has 39,105 acres of commercial forest land, primarily Douglas-fir with lesser amounts of aspen, ponderosa pine and spruce-fir. The Commercial Forest Land Overlay (FR 3.8-3) shows the general location of all stands. More detailed information is available on the Grand Junction Resource Area Timber and Woodland Type Maps found in the resource area office. 31,070 acres are typed as Douglas-fir. The majority of this is found in the northern reaches of the resource area, usually in the 7,000 to 9,000 feet elevation range on steep sideslopes. It often occurs in association with one or more of the other species, but it also occurs in pure stands.

Quaking aspen is the second most common timber type in the resource area, occupying 4,954 acres. It usually occurs as small isolated stands along drainages or in areas with a high soil moisture content. Several rather extensive stands are found in the 4A Mountain-Henderson Ridge and Bowdish Wash areas along the ridge tops. These stands will probably be replaced with Douglas-fir, a climax species, over time if no management plan is instituted.

Ponderosa pine is a climax species scattered sparsely throughout the southern part of the resource area in the 7,000 to 8,500 feet elevation range. Ponderosa pine grows under a wide variety of physiographic, edaphic, climatic and biotic factors. It occupies approximately 2,335 acres, often in association with the pinyon-juniper type.

Spruce-fir is found on approximately 746 acres, the majority of it in rather isolated stands on steep ground, usually with a northern aspect. It often occurs in association with Douglas-fir or white fir.

### Condition and Trend

The resource area has been harvesting approximately one million board feet (MMBF) annually in fuelwood and sawtimber with the majority of it in fuelwood. Significant numbers of Christmas trees and posts are also being harvested annually. The demand for these products, as well as many others, has been steadily increasing over the last few years. The demand can be expected to continue to increase as the Grand Valley's population continues to grow. Rising energy costs have also been a contributing factor in the increased demand for fuelwood.







## Woodlands

The pinyon-juniper woodlands generally exhibit a wide range of ages, stocking and conditions within a given area, even within a given stand. The majority of the stands, though, are approaching or at maturity with the exception of those stands that have undergone a seral disturbance. Stand volumes average about six cords/acre, all stands and all sites considered.

The resource area has harvested an estimated 2,000 cords of fuelwood annually for the last five years. Half of this volume is coming out of stands in the form of dead fuelwood, what could be termed mortality salvage. The other half is coming out of mature pinyon-juniper stands in the form of green fuelwood. There are presently 11,000 acres of pinyon-juniper woodlands that are classified as nonstocked, with approximately another 60 acres being added each year. The regeneration lag period for pinyon-juniper is estimated to be 40 years. The nonstocked acreage has historically been the source for almost all of the resource area's Christmas trees. This source is on the verge of being depleted, though. Additional areas need to be identified to keep the program going.

Insects and diseases are endemic in the pinyon-juniper woodlands. Black stain root rot is found in several stands on Glade Park, but it is not a major problem at the present time.

## Commercial Forest Land

It is difficult to gauge the condition of the commercial forest land. Very little of it has been under any type of intensive management program. The majority of it is in isolated stands with no legal access - often on sideslopes in excess of 60 percent. These stands are considered for the most part uneconomical to manage at the present time, with but a few exceptions. It is plausible that conditions could change at some point in time to warrant management of this commercial forest land. This is not expected to happen in the foreseeable future, though.

The commercial forest land in general, though, can be classed as healthy and approaching or at maturity. Minor pest problems are known to exist in isolated stands throughout the resource area. Management of these stands will be on an opportunity basis.







## EXISTING MANAGEMENT SITUATION

### CURRENT MANAGEMENT

The Grand Junction Resource Area of the BLM administers approximately 575,189 acres of forested land (Table 3.8-1). This includes 536,084 acres of woodlands and 39,105 acres of commercial forest lands and noncommercial forest lands. Budget constraints and manpower limitations required that our 1982-1983 inventory be somewhat limited. It was felt that since there was no demonstrated demand for sawtimber that the inventory would concentrate on the pinyon-juniper woodlands which have a history of heavy use. No attempt was made to differentiate commercial and noncommercial forest lands in the inventory. The assumption was made for present that it was all commercial forest land.

The inventory identified 134,684 acres of pinyon-juniper woodlands suitable for management - based upon crown density and topography. These woodlands contain an estimated 885,000 cords of fuelwood. This does not take into consideration any multiple use constraints. Acreage that is suitable for management may, in fact, be unavailable for management; as is the case with wilderness study areas (WSAs). Seven areas presently qualify as WSAs in the Grand Junction Resource Area. These areas contain an estimated 28,978 acres of pinyon-juniper woodlands suitable for management. Interim management guidelines permit only limited activity in these areas, though.

The resource area currently has an assigned cut of 1.0 MBF annually, regulated and nonregulated combined. This level is, for the most part, arbitrary and is not based upon demand or sustained yield. Demand is presently 1.1 - 1.6 MMBF annually. The resource area is currently cutting at this level. This is well within its sustained yield harvest of 2.6 MMBF. A variety of harvest techniques are being used in putting up this cut.

The preponderance of the area's fuelwood sales have historically occurred in the Dominguez area - totaling 22,000 cords - primarily pinyon pine. This cordage has largely come from chainings, done in the 1960's, with the exception of some 4,000 cords harvested using a partial cut system. These old chainings have also been used extensively for Christmas tree cutting during the past decade.

Numerous fuelwood sales have also occurred on Glade Park, primarily in the Tom's Canyon area, but to a much larger extent than in the Dominguez area. The Tom's Canyon area is the site of several chainings also done in the 1960's. Several small green fuelwood sales, mainly for personal use, have also been offered on Glade Park.







Timber Ridge, east of the Little Dolores River, has an estimated 4.0 MMBF of mature pinyon-juniper and represents one of the better areas in terms of vehicular access and proximity to Grand Junction. No legal access exists into this area at the present time, though. Lack of public access is a major management concern on Glade Park, as well as in many other parts of the resource area.

Most of the resource area's past timber sales have occurred in the ponderosa pine type on Glade Park. Seven sales totaling 1.1 MMBF have been sold in North East Creek and Snyder Flats, all on a negotiated basis. More recent timber sales have been primarily in the Gateway area.

Several commercial fuelwood sales have also been offered in the Gateway area the past couple of years with more planned for the future. It is anticipated that a large percentage of all future commercial fuelwood sales will come out of this area as it has extensive stands of mature pinyon pine. Much of the area, though, is under uranium mining claims which may present some future management problems, given the miners' rights and the Bureau's lack of rights under the general mining law of 1872.

Scattered sales of timber, fuelwood, posts, etc., have also taken place in other parts of the resource area but to a much lesser extent than in those areas previously mentioned. Post sales have occurred throughout much of the Book Cliffs, but they appear to be on the decline. The more accessible areas have pretty much been cut over.

The northern reaches of the resource area are the site of most of the resource area's commercial forest lands. Douglas-fir is the primary species represented. Douglas-fir stands are found at the head of most of the major drainages at the 7,000-foot to 9,000-foot elevation range, almost always on steep ground. The Douglas-fir beetle (Dendroctonus pseudotsugae var. Hopkins) has reached epidemic proportions in some of these stands. Little can be done to control these outbreaks given the area's steep terrain and its associated economics.

## SUPPLY

The major forest product from the Grand Junction Resource Area has historically been fuelwood, primarily pinyon pine. The resource area has sold and/or given away an average of 2,500 cords (1.25 MMBF) of pinyon pine and juniper fuelwood yearly since 1978 (Table 3.8-2). It sold less than 500 MBF of sawtimber in that same five-year period.

The 1982-1983 inventory identified 134,684 out of 536,084 acres of pinyon-juniper woodlands (Table 3.8-3) as suitable for management, with an estimated volume of 885,000 cords (442.5 MMBF). No optimal allowable cut for woodlands has yet been determined. It is estimated to be in the neighborhood of 5,200 cords (2.6 MMBF) annually, given a 170-year rotation and no multiple use constraints.







TABLE 3.8-2  
COMMERCIAL FOREST AND WOODLAND SALES (1978-1982)

Fiscal Year	Product	Number of Sales	Volume	Units	Value (\$)
1978	Fuelwood	233*	1,182	MBF	1,182.00
	Line Posts	21	1,621	Posts	486.30
	Corner Posts	5	320	Posts	144.00
	Wildings	6	70	Wildings	70.00
	Christmas Trees	unknown	3,371	Trees	5,056.50
	Sawtimber	1	241	MBF	9,278.50
	Total				16,217.30
1979	Fuelwood	606	1,166.4	MBF	4,665.60
	Free Use	54	---	---	---
	Wildings	unknown	194	Wildings	194.00
	Christmas Trees	unknown	2,245	Trees	3,367.50
	Sawtimber	1	23	MBF	885.50
	Total				9,112.60
1980	Fuelwood	575	705.1	MBF	4,239.20
	Free Use	294	435.5	MBF	---
	Wildings	10	---	Wildings	56.00
	Christmas Trees	unknown	2,218	Trees	5,997.50
	Sawtimber	4	56	MBF	2,156.00
	Total				12,448.70
1981	Fuelwood	452	586.5	MBF	4,459.45
	Free Use	773	691.5	MBF	---
	Posts, Poles, etc.	62	5,484	Posts	1,454.50
	Wildings	23	177	Wildings	305.00
	Christmas Trees	2,691	2,876	Trees	7,190.00
	Free Use	52	241	Trees	---
	Sawtimber	0	0	MBF	0.00
	Total				13,408.95
1982	Fuelwood	218	714.5	MBF	9,996.65
	Free Use	848	788.5	MBF	---
	Posts, Poles, etc.	43	20.7	MBF	1,030.90
	Wildings	23	177	Wildings	388.50
	Christmas Trees	2,382	2,498	Trees	7,494.00
	Free Use	29	142	Trees	---
	Sawtimber	10	101.9	MBF	1,284.23
	Total				20,194.28

Source: GJRA Depletion Records

\*Includes free permits







TABLE 3.8-3  
WOODLAND RESOURCE

Capability Unit	Suitable Resource				Nonsuitable Resource		
	Pinyon		Juniper		Acres	Pinyon Volume (Cords)	Juniper Volume (Cords)
	Cords	MBF	Cords	MBF			
01 Glade Park	42,983	31,485.0	201,466	100,733.0	110,989	71,891	350,591
02 Kannah Creek	4,919	440.0	22,089	11,044.5	6,584	8,738	27,712
03 Dominguez	23,818	56,448.5	70,978	35,489.0	26,226	104,774	55,202
04 Gateway	31,171	48,346.0	119,494	59,747.0	76,949	147,642	188,117
05 Mount Garfield	3,310	1,903.0	20,191	10,095.5	29,753	74,330	73,976
06 Baxter-Douglas	,893	91.5	6,735	3,367.5	62,996	156,518	156,569
07 De Beque	18,229	28,273.0	69,881	34,940.5	59,337	146,087	147,378
08 Collbran	6,361	4,452.5	31,805	15,902.5	28,566	64,592	70,538
Total	134,684	171,439.5	542,639	271,319.5	401,400	774,572	1,070,083







The inventory also identified 39,105 acres of commercial and noncommercial forest lands in the resource area with Douglas-fir, spruce-fir, ponderosa pine and aspen as the major forest types. There is no estimate as to what percent of the total is suitable for management. It is considered, for the most part, uneconomical to manage these forest lands at the present time.

## DEMAND AND DEPENDENCY

### Commercial Forest Land

The sawmill industry in the Grand Junction Resource Area has been in a state of flux for a number of years. There are presently six small sawmills in the resource area. Their combined annual production is 1.9 MMBF with a maximum total capacity of 3.3 MMBF. There are four additional sawmills within an economical haul distance, but outside the resource area, that have a combined annual production of 6.8 MMBF with a maximum total capacity of 8.8 MMBF.

The U.S. Forest Service, BLM - Montrose, and BLM - Glenwood Springs are more than capable of meeting the present and future demands for the sawtimber industry in this area, even if mills cut at capacity, which is doubtful.

Grand Junction's contribution to the overall market situation is not critical nor is it expected to be within the next 20 years given that the majority of the resource area's commercial forest land is on steep ground in isolated tracts with no legal access - and much without any physical access.

It is presently not considered economical to log timber on 35 percent plus sideslopes in the Rocky Mountain region in today's market. It is not something that is new either. The economic situation for harvesting and processing timber on gentle slopes, much less steep slopes, has been deteriorating throughout Colorado and the entire Rocky Mountain region for a number of years.

The problem is that the harvesting of timber in the region is rapidly becoming more costly relative to the value of the end products and is not just a temporary result of a depressed housing market. Sawtimber milling costs have increased 35 percent over the last five years, while the selling value has increased only 5 percent.

The disparity is due mainly to the quality of the forestry resource. The quality just isn't there when compared with other regions of the United







States. On an average, only 35 percent of the timber in Region 2 is recoverable with the remaining 65 percent falling into waste or low value end products such as chips.

Opportunities do occasionally occur for the Grand Junction Resource Area to offer small economical timber sales, often on a negotiated basis. These sales tend to benefit both the small operator and the BLM. They provide the small mills with a source of raw materials by removing the high risk and overmature trees while maintaining a healthy forest for future management by the BLM when economic conditions warrant it.

## Woodlands

Fuelwood sales have averaged 2,500 cords (1.25 MMBF) annually for the last five years (1978-1982). The majority of these sales have been for personal use. The resource area is presently offering about 500 cords of pinyon-juniper a year for resale through competitive sales. The majority of this cordage, roughly 75 percent, is sold locally. The Aspen-Vail market takes the majority of the rest with a small fraction going to the Denver market.

The demand for fuelwood, both for personal use and resale, is on the increase; sales have increased 21 percent over the past five years. This increase is due both to gains in the population base and an increase in the number of people heating with fuelwood. More and more people are turning to wood as a heat source as energy costs continue to escalate. Natural gas prices are expected to increase approximately 20 percent this year alone.

Pinyon pine is the preferred fuelwood from BLM administered lands. No estimate is available as to what percentage of the total harvest is pinyon pine, but it is probably in the neighborhood of 80 to 90 percent. Several reasons account for the preference. The one most often mentioned is that pinyon pine is easier to cut than juniper. This strong preference could lead to future problems of relative pinyon scarcity, even to an eventual juniper monoculture without proper management.

The BLM administers a fuelwood resource that is somewhat unique in the pinyon-juniper woodlands, due to its vastness. The U.S. Forest Service has large acreages of aspen, ponderosa pine and spruce-fir; but they are managed primarily for sawtimber - fuelwood is just a by-product. They have very little or no acreage they manage primarily for fuelwood production. Pinyon pine and juniper constitute 40 to 60 percent of all commercial fuelwood sales and 25 to 35 percent of all fuelwood consumed in the Grand Valley at the present time. These percentages will no doubt increase over time as the stockpile of dead timber on the national forests is depleted, thereby placing a greater dependency on the pinyon-juniper woodlands.





## CAPABILITY ANALYSIS

### DEFINITIONS OF RESOURCE CAPABILITY LEVELS

See Appendix A, Capability Analysis Form 1.

### MANAGEMENT PRACTICES

See Appendix B, Capability Analysis Form 2.

### DESCRIPTION OF RESOURCE CAPABILITY LEVELS

See Appendix C, Capability Analysis Forms 3





# CAPABILITY ANALYSIS FORM 1 DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Forestry Specialist John E. Michael Hicks

Date 11/15/83

## APPENDIX A DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Capability Level 1 (Define the highest priority for management)

Productive pinyon-juniper woodlands - Pinyon-juniper woodlands with at least 40 percent crown closure and an slope gradient of less than 35 percent.

Resource Capability Level 2 (Define the second highest priority for management)

Commercial forest lands - Forest lands having an capable of growing timber of commercial character and availability available for use prospectively for commercial use and for intensive management and use. It is considered for the next best management or other forest lands at the present time and for the next 25 years.

Resource Capability Level 3 (Define the third highest priority for management)

Nonproductive pinyon-juniper woodlands - Pinyon-juniper woodlands with less than 40 percent crown closure and/or an slope gradient of greater than 35 percent.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Forestry Specialist Name C. Michael Hicks

Date 11/15/83

Resource Capability Level 1 (Define the highest priority for management)

Productive pinyon-juniper woodlands - Pinyon-juniper woodlands with at least 40 percent crown closure and on slope gradients of less than 35 percent.

Resource Capability Level 2 (Define the second highest priority for management)

Commercial forest lands - Forest lands bearing or capable of bearing timber of commercial character and economically available now or prospectively for commercial use and not otherwise withdrawn from such use. It is considered for the most part uneconomical to manage these forest lands at the present time and for the next 20 years.

Resource Capability Level 3 (Define the third highest priority for management)

Nonproductive pinyon-juniper woodlands - Pinyon-juniper woodlands with less than 40 percent crown closure and/or on slope gradients of greater than 35 percent.





## CAPABILITY ANALYSIS FORM 2

APPENDIX B  
MANAGEMENT PRACTICESResource Name ForestrySpecialist Name C. Michael HicksDate 11/15/93

Describe the types of management that you would use to RCL 1 area

## A. Silvicultural System

1. Selection cuts
2. Seed tree cuts
3. Clearcuts
4. Salvage cuts

## B. Legal issues for management:

1. Manage on sustained yield basis for maximum net present forest benefits
2. PL 167 (management for commercial stands)

Describe the types of management you would use to RCL 2 areas

## A. Silvicultural System

1. Douglas-fir
  - a. Clearcuts
  - b. Shelterwood/Selection cuts
  - c. Salvage cuts

## 2. Ponderosa pine

- a. Shelterwood/Selection cuts
- b. Salvage cuts

## 3. Spruce-fir

- a. Clearcuts
- b. Shelterwood/Group selection
- c. Salvage cuts

## 4. Aspen

- a. Clearcuts
- b. Salvage cuts





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name ForestrySpecialist Name C. Michael HicksDate 11/15/83Describe the types of management that you would use in RCL 1 area

- |                          |                                     |
|--------------------------|-------------------------------------|
| A. Silvicultural Systems | B. Legal access for management.     |
| 1. Selection cuts        | C. Managed on sustained yield basis |
| 2. Seed tree cuts        | for fuelwood and minor              |
| 3. Clearcuts             | forest products.                    |
| 4. Salvage cuts          | D. PL 167 Determination on          |
|                          | commercial stands.                  |

Describe the types of management you would use in RCL 2 areas

- |                                |                            |
|--------------------------------|----------------------------|
| A. Silvicultural System        | B. Manage on an opportune  |
| 1. Douglas-fir                 | basis based upon economics |
| a. Clearcuts                   | and sustained yield.       |
| b. Shelterwood/Selection cuts. |                            |
| c. Salvage cuts.               |                            |
| 2. Ponderosa pine              |                            |
| a. Shelterwood/Selection cuts. |                            |
| b. Salvage cuts.               |                            |
| 3. Spruce-fir                  |                            |
| a. Clearcuts                   |                            |
| b. Shelterwood/Group selection |                            |
| c. Salvage cuts.               |                            |
| 4. Aspen                       |                            |
| a. Clearcuts                   |                            |
| b. Salvage cuts                |                            |





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Forestry

Specialist Name C. Michael Hicks Date 11/15/83

Describe the types of management that you would use in RCL 3 area

A. Silvicultural Systems

1. Clearcuts - access roads, well pads, etc.
2. Salvage cuts.

B. Manage on an opportune basis based upon economics and sustained yield.







### 3.9 WILDLIFE

#### RESOURCE AREA PROFILE

##### TERRESTRIAL WILDLIFE AND WILDLIFE HABITAT

The Grand Junction Resource Area specializes in variety of species and not in large populations. Greater population densities of most wildlife species can be found in neighboring regions, on U.S. Forest Service or private land, yet this resource area has a greater variety of species than any adjacent one (Table 3.9-1). Wildlife of the pinyon-juniper woodlands are well represented and, and the deer population is among the best. However, the Colorado Division of Wildlife is proposing to increase the deer herd by 17 percent and the elk herd by 3 percent (with decreases in some areas) between 1982 and 1988. With its shortcomings, harvest records are among the best indices to trends in game and furbearer populations. Elk harvest has steadily been increasing yet since the late seventies the hunter percent success has diminished. Mule deer harvests peaked in the early sixties, stabilized in the seventies while percent success stabilized lower after the peak years than prior to them. Black bear harvests have been surprisingly stable through the last 30 years, since with the summer hunting season more sows with cubs are being taken. No significant noncyclical changes are visible in these records for small game and furbearers except for kit fox which has shown an increase probably due to improved reporting on this species.

There are an estimated \_\_\_\_\_ deer and \_\_\_\_\_ elk on the public land in the resource area during the summer and \_\_\_\_\_ deer and \_\_\_\_\_ elk following the hunting season (on winter range). This amounts to approximately \_\_\_\_\_ AUMs of deer use and \_\_\_\_\_ AUMs of elk use. Table 3.9-2 divides the resources area and ranks these divisions according to the amount of habitat each has. The table displays the habitat ranking for deer, elk and the other species or groups of vertebrate wildlife in the resource area. Table 3.9-3 shows the assessment on deer and elk ranges of the adequacy of water distribution and the condition and trend of forage and cover. Water distribution is most significant on summer range. Good condition deer range may be fair, even poor elk range. The table gives summary evaluations. Cover condition is a reflection of how much range is underutilized because cover is adequate. The last column focuses on major population and habitat problems.

Colorado Division of Wildlife is proposing to increase the deer herd by 17 percent and the elk herd by 3 percent (with decreases in some areas) between 1982 and 1988. With its shortcomings, harvest records are among the best indices to trends in game and furbearer populations. Elk harvest has steadily been increasing yet since the late seventies the hunter percent success has







Wild Cat

TABLE 3.9-1

Numbers of Wildlife Species by Group in the Grand Junction BLM Resource Area

Mammals			Birds			Reptiles			Amphibians			Fish		
Group	No.		Group	No.		Group	No.		Group	No.		Group	No.	
Big Game	6		Nongame			Lizards	9		Salamanders	1		Game		
Small Game	4		Waterbirds			Snakes			Toads & Frogs			Cold Water	11	
Furbearers			T&E Species	2		Non-venomous	10		Native	8		Warm Water	17	
Aquatic	3		Others	11		Venomous	1		Exotic	1		Nongame (T&E)	4	
Other	9		Waterfowl	25										
Varmints	13		Raptors											
Nongame			T&E Species	2										
T&E Species	2		Others	23										
Other	40		Upland Game	9										
Exotic	3		Marshland Game	4										
			Nongame											
			Shorebirds	29										
			Songbirds	115										
			Others	17										
			"Varmints"	3										
Total	80			240				20			10			32

EXcludes feral species (fox, coyote, goat, etc.)

2 opossum is a furbearer; house mouse is a varmint; cute, but a varmint; moxflon is without status

This table is about the same as the one in the previous report







TABLE 3.9-2

## Priority Ranking of Wildlife Habitat

by Arca  
~~Management Opportunity~~

Species/Group	Glade Park	Kannah Creek	Dominguez	Gateway	Mount Garfield	Baxter- Douglas	De Beque	Collbran
mule deer	1	2	3	4	5	6	7	8
elk	8	7	4	3	2	1	5	8
black bear	6	8	1	2	6	4	5	7
mountain lion	6	7	3	2	7	1	4	5
bighorn sheep	1	-	2	2	5	1	4	8
pronghorn	-	1	-	-	3	2	-	-
waterfowl	7	2	6	5	3	2	-4	8
wild turkey	2	5	3	1	8	7	6	4
ring-necked pheasant	-	2	-	-	3	1	-	-
Gambel's quail	1	1	-	-	3	2	-	-
chukar	4	-	3	2	7	1	5	6
blue grouse	-	-	2	-	-	-	1	-
sage grouse	2	-	3	1	-	-	-	-
bandtail pidgeon	-	3	-	-	2	1	-	-
rabbits	-	-	2	3	1	1	-	-
pine (red) squirrel	-	3	-	-	2	1	-	-
prairie dog	6	5	2	4	7	1	3	8
Aquatic furbearers	1	3	2	3	2	1	-	-
bobcats	2	3	4	5	2	1	3	-
raptors	-	3	-	-	2	1	-	-
bald eagle	2	3	4	5	2	1	-	-
kit fox	-	4	5	6	3	1	7	8
nongame (general)	2	6	5	4	3	1	2	-
colonial nesting waterbirds	2	2	3	1	5	6	4	-
peregrine falcon	2	2	3	4	4	1	3	-
golden eagle	-	-	-	-	4	1	1	-
Colorado R. cutthroat	5	1	1	4	3	3	2	6
cold water fish	-	2	-	5	3	1	4	-
warm water fish	-	-	-	-	-	-	-	-
Colo. R. endemics	2	-	-	-	-	-	-	-

Notes: Ranking based upon (1) quantity of habitat and (2) public access.

AREA

3) a subjective judgement of habitat improvement feasibility.

A dash in the block indicates the area has the most accessible habitat on public lands; higher numbers indicate relative lesser amounts.

The number 1 indicates that jackrabbits, prairie dogs, and bobcats are classed as varmints and management actions promoting them may need lesser amounts.

legat or public acceptance.







# TABLE 3, 9-3

Deer and elk habitat condition and trend in the Grand Junction

BLM Resource Area

Area	Range	Water Distribution	Forage Condition	Forage Trend	Cover Condition	Cover Trend	Narrative Summary
Glade Park (Pinyon Mesa)	S	F	F	↑	G-F	↑	use expanding to the north, water limitations here
	W	G	F	↑	F	↑	use expanding to north and west, overuse in Dolores Triangle
Kannah Creek	S	-	-	-	-	-	few animals present in summer
	W	G	P	↑	F	↑	BLM chaining too large, poor understory in PJ veg. type
Dominguez	S	P	F-P	↑	F-P	↑	chaining too large, but cover filling in; water limitations here
	W	F	F-P	↑	G	↑	lower elevations poor in forage - stoney PJ land
Gateway	S	P	G-F	↑	G	↑	relatively little summer range, most animals are in UT or in head of
	W	P	F-P	↑	F-P	↑	poor distribution of utilization
Mt. Garfield to E. and W. Salt Creek	S	F-P	G	↑	G	↑	population rebounding and elk increasing, water locally limited
	W	G	F	↑	F	↑	early spring pasture limiting, narrow canyons concentrate human and animal encounters
Roan Creek	S	G	F	↑	G	↑	more private land than public and access to public limited
	W	G	F-P	↓	G-F	↑	early spring pasture, except at SW end, is private hay fields
Plateau Creek	S	G	G-F	↑	G-F	↑	more Natl. Forest than public, access to public limited
	W	G	F-P	↑	F	↑	almost all of range affected by private land - shared daily with public, limited public access

Note;

Range = Summer and Winter deer and elk ranges

G = good, F = fair, P = poor

↑ = condition is improving  
 ↑ = " " not really changing  
 ↓ = " " declining





diminished. Mule deer harvests peaked in the early sixties, stabilized in the seventies while percent success stabilized lower after the peak years than prior to them. Black bear harvests have been surprisingly stable through the last 30 years, since with the summer hunting season more sows with cubs are being taken. No significant non cyclical changes are visible in these records for small game and furbearers except for kit fox which has shown an increase probably due to improved reporting on this species.

#### AQUATIC WILDLIFE AND HABITAT

The amount, condition, and trend of the streams and reservoirs of the public land in the Grand Junction Resource Area are displayed in Table 3.9-4.

#### THREATENED AND ENDANGERED SPECIES AND HABITATS

All the threatened and endangered species of the resource area on federal and state lists plus other species identified by various agencies to be in a tenuous position are contained in Table 3.9-5. Animals and plants are ranked separately as to liability for extinction.





TABLE 3.9-4

## Aquatic Habitat in the Grand Junction E/M Resource Area

Water Body	Perennial or Intermittent <sup>1/</sup>	Public Habitat mi/ac	% of Total Habitat	Present Aquatic Habitat <sup>2/</sup>				Predicted Aquatic Habitat Changes				Fishery Habitat <sup>3/</sup>
				Ex	G	F	P	Ex	G	F	P	
Gunnison River	P	9	38		9				NC			Channel catfish, suckers, carp, roundtail chub, humpback sucker, Colorado snowfish, humpback chub
Pig Dominguez	P	15	52		2	5	8		+3	-5	+2	Rainbow, brook trout
Little Dominguez	P	14	88			5	9			+9	-9	Suckers
East	I	5.8	34				5.8			+1.5	-1.5	
Northeast	P	5.5	55				5.5				NC	Cutthroat trout
Dolores River	P	17	59				17				NC	Channel catfish, carp, suckers, rainbow, bullhead
Blue	P	7.6	69				7.6		+2	+4.1	-6.1	Rainbow, suckers
Calamity	I	6.8	57				6.8				NC	
West	P	4	18	3		1		NC	+1	-1		Rainbow, brook, cutthroat, brown trout
Ute	P	4	63			4				NC		
North	P	3.1	52	3.1				NC				Rainbow, brook trout
Plateau	P	5.3	18		.5		4.8		NC		NC	Rainbow, brown trout, roundtail chub, suckers
Colorado River	P	<del>10.7</del> 20	42			10				NC		Channel catfish, bullhead, roundtail chub, sucker, large mouth bass, humpback sucker, Colorado River snowfish, carp, humpback chub
Cottonwood	P	4	62			4				NC		
Rapid	P	2.5	36				2.5				NC	
Spring (E. Fork)	P	1	14			1				NC		
Pull	P	.25	3			.25			NC			Cutthroat trout
Salt (E. Fork)	P	.25	6				.25				NC	
Leon	P	1	9		1				NC			Rainbow, cutthroat, brown, brook trout







TABLE 3.9-4 cont.

Water Body	Perennial or Intermittent <sup>1/</sup>	Public Habitat mi/ac	% of Total Habitat	Present Aquatic Habitat <sup>2/</sup>				Predicted Aquatic Habitat Changes				Fishery Habitat <sup>3/</sup>
				Ex	G	F	P	Ex	G	F	P	
West Hawthurst	P	1.5	21			1.5					NC	Rainbow, cutthroat trout
East Hawthurst	P	1.5	100			1.5					NC	Rainbow, cutthroat trout
Kannah	P	.25	1			.25					NC	Rainbow, cutthroat, brown trout
Kannah (N. Fork)	P	1.4	14			1.4					NC	Rainbow trout
Kimball	P	.2	1.25				.2				NC	Rainbow trout
Roan	P	7	23			7			+1	-1		Rainbow, cutthroat, brook trout
Carr	P	5	45		.3		4.7		+3.7	+1	-4.7	Brook trout
Brush	P	2.2	22			1.2	1				NC	Rainbow trout
Clear	P	.5	2			.5					NC	Rainbow trout
Little Dolores River	P	4	16			4					NC	Rainbow, brook trout
North Lobe	P	1.5	19			1.5					NC	Rainbow trout
Barrel Springs Canyon	P	6.4	100				6.4				NC	
Barrel Spring (R. Fork)	P	2.6	100				2.6				NC	
Fall	P	1.25	100				1.25				NC	
East Salt	P	14.5	54				14.5				NC	
Beezer	P	1.8	19				1.8				NC	Few trout reported
Corral Canyon	P	3	100				3				NC	
Hay Canyon	P	1.2	28				1.2				NC	
Calf Canyon	P	3.4	85				3.4				NC	
Trail Canyon	P	1	7				1				NC	
Collier	P	1	17			1					NC	
Jerry Creek Res (#1)	P	1.3/24	60			24ac					NC	Rainbow, brook trout
Hollenbeck Res.	P	.2/2.5	5			25ac					NC	Largemouth bass
6-50 Res.	I	.6/10	100				10ac				NC	
Ruby Lee Res.	I	1.2/10	100				10ac				NC	
Echo Lake (Melhorne L.)	I	.5/10	25				10ac				NC	
Corral Canyon Res.	P	.2/5	100				5ac				NC	
Total (miles) (acres)		181.3 61.5			6.1 2.5	16.05 24.0	46.85 35.0		+10.7	+8.6	-19.3	

<sup>1/</sup> From USGS quadrant maps and BLM surface management quadrant maps.

<sup>2/</sup> The aquatic community is composed of a watery habitat and those organisms that are partially or totally submerged in it for most of their lives. The aquatic communities are classified according to the following system.

Excellent: abundant, diverse, and stable community; cover for fish available; pools and riffles supporting optimum production of producers and consumers.

Good: community diverse, but below potential; cover available, but somewhat reduced; pools and riffles supporting good numbers of producers and consumers.

Fair: community noticeably limited in numbers and diversity; cover limited and limiting animal populations; some fish present, but populations and reproductive potentials reduced by the habitat.

Poor: community barely surviving; cover lacking; a few fish may be surviving, but little chance of continued survival; diversity of invertebrates low, but numbers of certain species may be high.

<sup>3/</sup> Fishery information was taken from DOW's creel census, electroshocking, gill net, and stocking records at the Northwest Regional Office.

\* Riparian habitat units for streams and reservoirs are given in linear miles.







TABLE 3.9-5  
COMPARISON OF THREATENED, ENDANGERED, AND SELECTED SENSITIVE SPECIES  
IN THE GRAND JUNCTION BLM RESOURCE AREA

Species	Rank of Endangerment <sup>1/</sup>	Presence in R.A. Confirmed	Status <sup>2/</sup>	Situation
<u>Animals</u>				
Black-footed ferret	1		E,e	Only one known population (Wyoming), R.A. has adequate prey base, 2 confirmed sightings adjacent Utah
Bonytailed Chub	2		E,e	Probably extinct in Colorado, known around Lake Mojave
Whooping Crane	3	X	E,e	Only one established flock, and one experimental "flock" (which migrates through resource area)
Razorback Sucker	4	X	2,e	Much less common than squawfish, no evidence of reproduction in upper Colorado River
Colorado River Squawfish	5	X	E,e	Colorado, Yampa, White and Green Rivers, habitat in R.A. mostly private or local government
Humpback Chub	6	X	E,e	Colorado River in R.A. has 2 of 3 or 4 populations
Peregrine Falcon	7	X	E,e	Worldwide species, common nowhere, rare mostly, 3 eyries in R.A., 15 in Colorado
Great Basin Silverspot Butterfly	8	X	1	+ 130 colonies in southwestern U.S. and central Mexico, all at small sites, 3 colonies in Colorado, spring development threatens





TABLE 3.9-5 (Continued)

Species	Rank of Endangerment <sup>1/</sup>	Presence in R.A. Confirmed	Status <sup>2/</sup>	Situation
Colorado River Cutthroat Trout	9	X	2, t	Trappers Lake in White River National Forest has strong population, R.A. has only one cutthroat stream
Columbia Sharp-Tailed Grouse	10	1969	G	If present in R.A. most likely on private land in Glade Park C.U., possible at Snyder Flats, Haystack Peaks, and in Dominguez C.U.; population down everywhere
Bald Eagle	11	X	E, e	14,000 + in 48 states; Colorado 8-10th ranked; R.A. has 1/15 of state population, public land crucial
Ferruginous Hawk	12	X	2	Only one nesting pair in R.A., a western hawk most sensitive to disturbance
Greater Sandhill Crane	13	X	e	Much if not most of the total population migrates through R.A.
River Otter	14	once	e	Widespread in northern hemisphere, once extinct in Colorado, recorded at Bridgeport in R.A.
Canyon Tree Frog	15	X	s	Southwest U.S. and Mexico, Black Ridge WSA at north edge of range.
Kit Fox	16	X	F	At least a pair per township in the Grand Valley desert; population appears to have suffered from human activities throughout West.
Black-crowned Night Heron	17	X	M	Widespread on continent, only known heronry in R.A. was on BLM island above Fifth Street Bridge, a few better heronries still exist on East Slope.





TABLE 3.9-5 (Continued)

Species	Rank of Endangerment <sup>1/</sup>	Presence in R.A. Confirmed	Status <sup>2/</sup>	Situation
Purple Martin	18	X	b	Common but dependent on man in East, rare in the West, no nesting found in R.A.
Western Bluebird	19	X	M	Widespread throughout West, vulnerable to intensive silviculture.
Prairie Falcon	20	X	M	Western North America, Book Cliffs have the best nesting concentration in R.A.
Golden Eagle	21	X	B	Widespread other hemisphere, vulnerable to shooting and eletrocution.
Great Basin Spade-foot Frog	22	X	s	Great Basin species, may be common
Three-toed Woodpecker	23	X	r	Canadian-Hudsonian zone of North America, nomadic, none recorded on public land in R.A., vulnerable to salvage logging.
Great Blue Heron	24	X	M r	Widespread North America, only one active heronry known in R.A.
Yellow-billed Cuckoo	25	X	2	Common but declining in East, rare in R.A., none recorded on public land, potentially in Colorado River cottonwoods.
Gray Vireo	26	X	P	Great Basin species, BLM and Colorado National Monument have most or all in R.A.
Scott's Oriole	27	X	P	Southwest U.S. and Mexican species, BLM and Colorado National Monument have most or all in R.A.







Species	Rank of Endangerment <sup>1/</sup>	Presence in R.A. Confirmed	Status <sup>2/</sup>	Situation
<u>Plants</u>				
Uinta Basin Hookless Cactus	1	X	T	Largest population in Vernal District, De Beque, Collbran, Dominguez, and Kannah Creek Capability Units.
Spineless Hedgehog Cactus	2	X	E	Moab, Montrose and Grand Junction Districts have total population; Kannah Creek, Glade Park and Dominguez Capability Units.
<u>Phacelia submutica</u>	3	X		Total population around De Beque, but not a collector's prize species.
<u>Festuca dasyclada</u>	4	X		Green River Formation, oil shale development would threaten.
<u>Astragalus lutosus</u>	5	X		Green River Formation, oil shale development would threaten.
<u>Cryptantha elata</u>	6	X	s	Manco shale; Grand County, Utah; Kannah Creek, Mt. Garfield, and Baxter-Douglas Capability Units.

1/ Animals and plants are ranked separately.  
Endangered here is from a worldwide viewpoint.

2/ E Federal list endangered species e State (Colorado) list endangered species  
T Federal list threatened species t State (Colorado) list threatened species  
1 Federal Category 1 species s State (Colorado) list sensitive species  
(insufficient data to list) r Rare species  
2 Federal Category 2 species G Game species  
(ready for listing) F Furbearer species  
M Federal Migratory species of high P Periferal species  
interest  
B Federal Bald Eagle Act protection







## EXISTING MANAGEMENT SITUATION

### Current Management

#### General Setting

Current wildlife management in the planning area consists partially as a support function to range management and the development of energy resources. The imperative to manage for energy development with minimal impact to the wildlife resource is facilitated by wildlife review and recommendations to development plans.

In the various plans that precede this RMP, the focus of wildlife management was to minimize loss of habitat quality and quantity and to offset those losses to the extent possible by installing habitat improvements. With this practice some wildlife populations are increasing, even with a downward trend in potential. Reintroduced bighorn sheep are an example. The increasing deer herd is another apparent example. Elk have steadily increased to where they are now at or near the maximum level that they can be accommodated (Colorado Division of Wildlife, 1983). Wildlife management guidelines are formulated in an RMP and developed into specific plans in documents called Habitat Management Plans.

Habitat Management Plans (HMPs) are written and officially approved for a specific geographical area of public lands. They identify objectives for wildlife habitat, establish the sequence of actions for achieving the objectives, and outline procedures for evaluating accomplishments.

There are two approved HMPs in the resource area, and they represent the extremes in size - 55 acres and 452,000 acres. Specific wildlife habitat improvement projects are kept to these areas except for the most urgent cases or where the funds and momentum are derived from outside sources. HMPs would continue to be developed until most, preferably all, of the resource area were covered (Table 3.9-5).





TABLE 3.9-6  
HABITAT MANAGEMENT PLAN SCHEDULE FOR THE  
GRAND JUNCTION BLM RESOURCE AREA

HMP Name	Priority	Approval Date	Percent Implemented	Key Species	HMP Area Size (Acres)	C.U.
Roan Creek	1	1978	80	Mule deer	452,000	7
Unaweep Seep	2	1983	40	Great Basin Silverspot	55	4
Kannah Creek	3			Deer, elk, pronghorn		2
Collbran	4			Deer, elk		8+2
Unaweep-The Palisade- Dugway	5			Elk, deer		4
Colorado River	6			Bald eagle, endemic fish		1+6
Grand Valley Desert	7			Pronghorn, waterfowl, desert wildlife		5+6
Book Cliffs to Roan Cliffs	8			Deer, elk, bear		5+6
Dominguez	9			Elk, deer		3
Glade Park	10			Elk, deer		1
Calamity Mesa	11			Deer		4
Dolores West and Ute Creek	12			Peregrine falcon, turkey		4







The Colorado Division of Wildlife performs a major role in the development of HMPs. Typically an HMP defines agency responsibility and becomes a cooperative agreement on habitat management between the Colorado Division of Wildlife and the BLM.

The Grand Junction Resource Area Oil and Gas Leasing Umbrella Environmental Assessment applies seasonal and no surface occupancy rules to locations where specified wildlife are in a vulnerable position. \_\_\_\_\_ acres are enclosed by these protections.

Four coal leases have been subjected to a formal review process to locate lands unsuitable for leasing or suitable with stipulations on mining methods. Seven criteria for these lands are for the protection of wildlife, the more vulnerable species (Appendix \_\_\_\_\_).

### Forage Management

The prime control of forage utilization by wildlife is exercised by the Colorado Division of Wildlife in the game harvest and by the BLM permitting of livestock use levels. Other factors influence the amount of forage available to wildlife (precipitation, off-road vehicle use, et al). Fifty percent of current annual growth as measured after the livestock grazing season and in the spring on big game winter range is the indexical threshold to proper use of the range. The utilization represents the consumption by all species of the plants' consumers that occurred within the season being sampled. At the termination of a livestock grazing season, livestock are assumed to be the dominant consumer. At the end of the period of big game concentration, big game are assumed to have been the major consumer. This means that if any consumer, down to gophers and grasshoppers, are consuming larger amounts of the forage, smaller amounts of the forage will go to the controlling consumer, livestock or big game, if the range is to be maintained. The monitoring of utilization is valuable in settling the question of who bears the greater responsibility on an area, the stockman or the big game constituents.

Under the M.I.C. range management program, utilization as a range management tool will be shifted more toward the livestock permittee. Range trend is expected to rise to greater importance in guiding BLM management decisions. Forage utilization by big game would continue to be a BLM and Colorado Division of Wildlife obligation.

The public land in the resource area provides 39,000 AUMs of deer and elk use. Another 1100 AUMs go to bighorn sheep, pronghorn, and black bear. By controls on livestock grazing in critical areas, minimizing habitat loss through road building and other surface disturbance, vegetation conversion and water projects the BLM can maintain for the next 20 years sufficient forage for the current populations of these big game species. Forage for other species of game and nongame would be assumed adequate over the resource area if the greatest consumers of plant production were kept from deteriorating their own range. The habitats of all species cannot be optimized, but this







assumption accommodates the species and similar population sizes to what is now enjoyed, for the next 20 years. Locally, projects could be an area designed to increase the forage for small game, nongame fish and threatened and endangered species. Improvements in feeding habitat for fish will be second in priority to water quality and spawning substrate improvements.

Forage management for livestock and big game has implications to cover management for ground-nesting birds, small mammals and reptiles, poor conditions preferred by most reptiles and better conditions generally chosen by the others.

## Cover Management

Vegetation structure is the most influential factor in habitat selection by birds and it is apparently almost as true for many other terrestrial wildlife species (Whitmore 1977, Wiens 1969). Vegetation structure provides cover and a feeding substrate. Vegetation is the chief material with which BLM can manage cover. In aquatic systems other materials are effectively used such as gravel and rocks.

Cover for wildlife functions in two basic ways, as thermal cover - shelter from cold wind, hot sun, heat-removing precipitation; and as visual cover-shelter from predators and other nonclimatic disturbances. Total cover for big game is and will continue declining. There now is an abundance of cover; but, unfortunately, it is not always strategically located next to food, water and travelways.

Management is two parted. One is identification of important cover and protecting or minimizing the damage to it from activities such as woodcutting and road building. It includes reducing human activity during periods when and in locations where big game are stressed and in greatest need of cover. Another approach to cover management is to identify where cover is plentiful, but forage is limited. Here is where vegetation conversion projects would be considered. There is no need for a forage improvement project, where cover is also limited. Neither are there very many opportunities to increase cover.

## Water Management

Distributing water for terrestrial wildlife, improving water quality for aquatic wildlife and extending aquatic and wetland habitat are approved practices in the HMPs. The potential for increasing wildlife is limited only by the water available. The resource area could become saturated with watering places for wildlife. Aquatic habitat improvement opportunities have visible limits. Yet increasing the area of wetland will almost certainly produce more pounds of animal wildlife.







## Supply-Demand Analysis and Dependency

### Game Habitat

The supply and demand for game habitat relates to the number of animals taken, hunter success rates, and permit limitations due to limited stock of animals. Section 3.13 discusses the hunting recreation resource. Table 3.9-6 indicates the relative importance of game habitat of the eight geographical areas. Game species also fill a non-hunter demand not generally accounted for.

The BLM administers 80 percent of the critical deer winter range in the resource area. The BLM monopolizes total winter range almost as thoroughly. Public land is least important in the Collbran and Glade Park Areas, yet in the latter area, the animals are becoming increasingly dependent upon the public land. Summer range is on forest, private, public and state lands, in that order of importance. The most extensive public land summer range goes from Utah to the Roan Cliffs in Baxter-Douglas, Mt. Garfield and De Beque areas.

Public land holds only 20 percent of the elk critical winter range and even less of the summer range. Elk herds in this resource area appear to be expanding and changing their winter range. Public land may soon become the major winter range for elk. Elk win the popularity contest with deer among hunters. If elk populations do not respond to Colorado DOW plans they will become major big game species.







TABLE 3.9-6

Game Species	Habitat	Geographical Area		Importance		Rank/P.L.		% of Total Habitat	
		1	2	3	4	5	6	7	8
Mule deer	Critical Winter	8/25	1/75	7/80	5/90	6/70	2/80	3/65	4/35
	Summer	7/05		6/05	4/10	2/85	1/85	3/15	5/05
Elk	Critical Winter	1/40	3/50	4/95	5/65	8/75	2/60	6/15	7/10
	Summer	1/05			4/05		2/60	3/20	5/05
Black Bear	Spring-Late	6/10		7/05	2/25	4/65	1/90	3/20	5/15
	Summer Fall(oak) Summer(aspen)	5/05			1/05		3/45	2/20	4/05
Bighorn	Yearlong	1/95		2/96					3/05
Pronghorn	Yearlong		1/85			3/70	2/80		
Upland Species	Cottontail Dove Chukar	8/	2/	6/	5/	3/	1/	4/	7/
Waterfowl	Migrant resting/ feeding	7/02	2/75	8/90	5/50	3/02	1/80	4/05	6/04

Black bear, the third most popular big game animal, is a steady resource. The important areas in approximately this order are Baxter-Douglas, Gateway and De Beque. The Collbran area has sizeable bear habitat. Much of it, however, is private and forest land. Kannah Creek area has very little use by bears. Summer habitat is the limiter in the Baxter-Douglas area. Spring-late summer-fall habitat is almost all that the Gateway area provides, but forest land on the Uncompahgre and in Utah offers some of the region's best summer habitat. Pronghorn habitat south of Kannah Creek and in the Grand Valley is 90 percent public. Desert bighorn sheep range is 95 percent public land, one range is shared with the Colorado National Monument. Chukar habitat is also almost exclusively on public land.

#### Nongame Habitat

Riparian areas, water developments, the scattered desert stands of junipers and taller shrubs, canyons and the taller cliff walls are the habitats on public land of greatest interest to those in serious pursuit of nongame wildlife study. Pinyon-juniper woodland contains a unique community of wildlife also. Because of the volume of land in saltbush desert and







mountain shrub, these lands are valued also, but the "hot" species are more allied to the other habitats. The prize species of the high country conifers are primarily on lands administered by the Forest Service. But the BLM manages 90 percent of the desert, pinyon-juniper, canyon and cliff country in the resource area.

#### Aquatic and Riparian Habitat

Less than one percent of the fishing in the resource area is done on public land streams. However, some moderate quality trout streams do exist. Most of the fishing on West and Plateau Creeks is on public land, although the larger part of the length of both streams is through private land. Access is the key reason for this. When the public land along Roan Creek is identified by signs as planned in the Roan Creek HMP, this creek may become a valued public fishing stream.

The ponds on Skipper Island were, before the flood of 1983, the resource area's best claim to warm water fisheries. Fishing pressure is less than one person a day on weekdays and one to two per day on weekends.

Riparian habitat is less than 0.1 percent of the total area and all of it is high priority. The public land areas of riparian habitat in Horsethief, Ruby, Big Dominguez Creek Canyons tend to be less disturbed.

#### Threatened, Endangered and Sensitive Species Habitat

These species are not to be viewed under the law of supply and demand. The importance of public land within the Grand Junction Resource Area to these species would be germane to some management situations. Table 3.9-7 contains all the state and federal list species plus some of the others identified by various agencies as species whose populations are in some tenuous position.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource T&E Species Specialist Name Ron Lambeth  
Date 11/72/82

Resource Capability Level 1 (Define the highest priority for management)

APPENDIX A

Species listed as threatened or endangered by state and federal governments.

CAPABILITY ANALYSIS FORMS

The primary use habitats:

Bald eagle	Colorado River Spanish
Pergrine Falcon	Woodcock
Black-footed ferret	Sharp-shin
Spiny-tailed hedgehog cactus	Colorado River cutthroat
Utah Basin hookless cactus	Whooping crane and greater
	sandhill crane have no
	primary use habitats
	identified.

Resource Capability Level 2 (Define the second highest priority for management)

Sensitive species which have primary use habitats that are known and reasonably localized. Also a plant association of special concern identified by the Colorado Natural Heritage Inventory.

Golden eagle	<u>Astragalus lentiginos</u> & <u>A. lentiginos</u>
Prairie falcon	<u>Cryptantha flava</u>
Scott's oriole	<u>Leptocarpus nigrum</u>
Cassin's kingbird	<u>Festuca elatior</u>
Black-crowned night heron	<u>Silene acaulis</u>
Snowy egret	<u>Agrostis perennans</u>
Great Basin silverspot butterfly	<u>Penstemon harringtonii</u>
Gray vireo	<u>Stripteris gardneri</u> / <u>Elmorus salinus</u>

(Other species are accommodated with higher priority habitat)

Resource Capability Level 3 (Define the third highest priority for management)

General, marginal or unspecified habitat of T&E and sensitive species throughout the resource area.

Bald eagle upland habitat	Raptor hunting territory
Dispersed prairie dog colonies	Short-tail Indra swallowtail
(ferret, burrowing owl)	& <u>Artemisia tridentata</u>
Utah Basin hookless cactus	Colorado blue-stemmed
marginal land	<u>Astragalus lentiginos</u>
Great Basin spadefoot frog	Long distance migrant monitoring
Canyon tree frog	area







CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource T&E Species Specialist Name Ron Lambeth

Date 11/22/83

Resource Capability Level 1 (Define the highest priority for management)

Species listed as threatened or endangered by state and federal governments.

The primary use habitats:

Bald eagle  
Peregrine falcon  
Black-footed ferret  
Spineless hedgehog cactus  
Uinta Basin hookless cactus

Colorado River Squawfish  
Humpback chub  
Razorback sucker  
Colorado River cutthroat  
(Whooping crane and greater  
sandhill crane have no  
primary use habitats  
identified.)

Resource Capability Level 2 (Define the second highest priority for management)

Sensitive species which have primary use habitats that are known and reasonably localized. Also a plant association of special concern identified by the Colorado Natural Heritage Inventory.

Golden eagle  
Prairie falcon  
Scott's oriole  
Cassin's kingbird  
Black-crowned night heron  
Snowy egret  
Great Basin silverspot butterfly  
Gray vireo

Astragalus lutosus & A. linifolius  
Cryptanthus elata  
Enceliopsis nutans  
Festuca dasyclada  
Sullivantia purpusii  
Aquilegia barnebyi  
Penstemon harringtonii  
Atriplex gardneri/Elymus salinus

(other species are accommodated with higher priority habitats)

Resource Capability Level 3 (Define the third highest priority for management)

General, marginal or unspecified habitat of T&E and sensitive species throughout the resource area.

Bald eagle upland habitat  
Dispersed prairie dog colonies  
(ferret, burrowing owl)  
Uinta Basin hookless cactus  
marginal land  
Great Basin spadefoot frog  
Canyon tree frog

Raptor hunting territory  
Short-tail Indra swallowtail  
& Eriogonum eastwoodii  
Dolores skeletonweed  
Astragalus linifolius  
Long distance migrant monitoring  
area





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Wildlife - Terrestrial & Aquatic Specialist Name Ron Lambeth

Date November 22, 1983

Resource Capability Level 1 (Define the highest priority for management)

Critical Areas

Mule deer critical winter range and primary migration areas.  
Elk critical winter range and production areas.  
Bighorn sheep primary range.  
Pronghorn antelope primary range.  
Sage grouse strutting ground and territory.  
Riparian areas (streambank vegetation) - game fish and many species of  
wildlife are managed for here.

Resource Capability Level 2 (Define the second highest priority for  
management)

Areas of relatively high potential for improvement or protection.

Mule deer and elk winter range feeding,	Waterfowl ponds (prod.,
Pronghorn antelope range	(nesting)
Mule deer summer range	Ponderosa pine wildlife
Black bear primary range	communities
Wild turkey areas	Pinyon-juniper/sagebrush
Cold water fish streams	wildlife communities
Mountain shrub wildlife communities	Advantageous wildlife interp. areas.

Resource Capability Level 3 (Define the third highest priority for management)

Areas of relatively low potential for improvement or protection due to  
dispersion or lack of public land and extremely heavy human use.





Resource Name

Specialist Name

## APPENDIX B

### MANAGEMENT PRACTICES CAPABILITY ANALYSIS FORMS 2

Describe the type of

1. Seasonal restrictions on biological processes

2. No surface disturbance to species to its detriment unless clearance is required

3. Identifying habitat and desirable, tree vegetation projects of merit

Describe the type of

1. Protection of raptors, humans, and avian AC(C)

2. Same as 1. above

Describe the type of

1. Management of land use information to the extent of the area in PCL 1 and 2

2. Maintain a permanent record of the suitability of land use resources





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name T&E SpeciesSpecialist Name Ron Lambeth Date November 22, 1983Describe the types of management that you would use in RCL 1 areas

1. Seasonal restrictions on activities that are likely to interrupt some biological process of the species during critical periods.
2. No surface occupancy by actions that would change the habitat of the species to its detriment. Section 7 consultation would be required here unless clearance checks and action alterations clearly removed the threat.
3. Identifying habitat improvement and protection measures that are feasible and desirable, then implementing them. Cooperate and encourage reintroduction projects of merit. Monitor habitat use and condition.

Describe the types of management you would use in RCL 2 areas

1. Protective stipulations where vital, including seasonal restrictions (raptors, herons), and no surface occupancy (Unawep Seep RNA, Atriplex/Elymus assn. ACEC)
2. Same as 3. above.

Describe the types of management you would use in RCL 3 areas

1. Management would concentrate on other wildlife species while expecting new information to lead to acres in these areas to go to RCL 2 or 1 areas and acres in RCL 1 and 2 areas to be refined out to RCL 3.
2. Maintain a sustained level of inventory, perhaps call it monitoring the suitability of management levels, to refine the knowledge of public land resources.







CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name Wildlife - Terrestrial and AquaticSpecialist Name Ron Lambeth Date November 22, 1983Describe the types of management that you would use in RCL 1 areas

Protection stipulations where appropriate, including seasonal restrictions (critical winter range, primary migration areas and production areas) and no surface occupancy (calving grounds, strutting grounds, riparian areas to the extent possible).

Manage for an optimum mix of forage and cover. Facilitate reintroduction projects of merit. Monitor for habitat condition and use trend.

Describe the types of management you would use in RCL 2 areas

- Maintain or improve watershed and livestock range conditions.
- Mitigate impacts through the NEPA process; protective stipulations would include avoidance or extensive rehab of cold water fish streams and waterfowl ponds.
- Watering source development, man-made wetland development.
- Forage production improvement projects with the habitat's indicator species.
- Snag management would identify standards for slash and standing dead residues.
- Selective monitoring of project success, wildlife habitat use, and effects of surface disturbance.

Describe the types of management you would use in RCL 3 areas

There should be:

- Standard stipulations applied to oil and gas activities.
- Rehabilitation to minimize damage to watershed, required of ground disturbing activities.
- Intensive ORV management.

Avoid riparian habitat, not identified in RMP, through the permitting process.





## 3.11 WILD HORSES

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## FIGURES

## 3.11-1. Little Book Cliffs Wild Horse Area

## OVERLAYS

## WH3.11-1. Wild Horse Migration Routes







### 3.11 WILD HORSES

#### RESOURCE AREA PROFILE

Approximately 65 wild horses are presently within the Little Book Cliffs Wild Horse Area (Fig. 1).

The horses and habitat are presently in good condition. The wild horse population of the Little Book Cliff herd is increasing at the rate of about 15 percent annually. Because the animals are protected by law and have few natural predators, the herds increase each year until their forage requirements exceed the carrying capacity of the wild horse area. A horse roundup is then scheduled to reduce the animals back to the carrying capacity of the area.

Horses migrate between summer and winter ranges within the area. Use is influenced by climate and the availability of water (Overlay WH 3.11-1). However, winter range is primarily in Coal Canyon and along the face of the Book Cliffs. Summer range is primarily in the high country around North Soda, Indian Peak and Monument Rock.

#### EXISTING MANAGEMENT SITUATION

##### CURRENT MANAGEMENT

The wild horses in the Grand Junction Resource Area are presently managed under a wild horse management plan. The plan, signed in August 1979, describes the management of the wild horses in the Little Book Cliffs Wild Horse Area.

The wild horse area was established in 1974 by a general management agreement and was formally dedicated as the Little Book Cliffs Wild Horse Range in November 1980. The area is located approximately 20 miles west of De Beque, Colorado. It encompasses 27,772 acres (Fig. 1) of which 27,065 acres are public land and 707 acres are private land. There are also an additional 1,203 acres that lie adjacent to the area that the horses use as winter range. The area lies atop the Book Cliff escarpment and extends some 13 miles







in length. It is bounded on the north by Adobe Canyon, on the west by the front of the Book Cliffs, on the east by Cottonwood and Main Canyons, and on the south by the junction of Main and Coal Canyons. The 707 acres of private land are a high priority for acquisition.

The general management agreement that established the wild horse area was between the BLM and affected livestock operators. The agreement was made to resolve conflicts between wild horses and livestock operators on the Round Mountain and Corcoran Wash Grazing Allotments. Under the agreement, all wild horses were to be placed in a selected fenced area, and all of the livestock were to be limited to the rest of the original allotment.

All of the wild horses have been enclosed by a three-rail pole fence in combination with natural barriers (sheer canyon walls and escarpments) where possible.

Because the wild horses and livestock are separated by barriers, competition for forage between wild horses and livestock is not a problem within the wild horse area. Neither is competition a problem outside the boundary on the adjacent 1,203 acres of Book Cliff slopes used by the horses because the slopes are inaccessible to livestock.

Vehicular access to the area is either by the Goblin Gulch-Dry Fork Road or by the Winter Flats Road. A number of foot trails up the Book Cliffs provide foot access into the area. These trails are used by local hikers and persons on horseback.

The Little Book Cliffs Wild Horse Area also is used by game, and nongame wildlife.

The area is also covered by oil and gas leases. Three oil and gas operators, representing 52 leases, propose to apply to the BLM for permits to drill 16 oil and gas wells over the next three years within six oil and gas units. These leases are partially located in the Little Book Cliffs Wild Horse Area.

The leases were issued prior to the passage of the Federal Land Policy and Management Act of 1976 and the designation of the Little Book Cliffs Wild Horse Area. Therefore, the lessees have the right to explore for and develop oil and gas wells within the parameters of the lease stipulations.

#### SUPPLY-DEMAND ANALYSIS AND DEPENDENCY

In the fall of 1983, 46 horses were rounded up and subsequently adopted through the BLM Adopt-a-Horse Program. The demand for these horses is high; applications for adoption always exceed the number of horses available for adoption.





The Little Book Cliffs Wild Horse Range is the only dedicated wild horse range in Colorado and is one of three such areas in the nation. The area receives substantial publicity in the local, as well as state, news media. It was officially dedicated to the memory of Velma (Wild Horse Annie) Johnson in 1980.

## CAPABILITY ANALYSIS

### DEFINITION OF RESOURCE CAPABILITY LEVELS

See Appendix A, CA Forms 1

### MANAGEMENT PRACTICES

See Appendix B, CA Form 2

### DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

See Appendix C, CA Forms 3





APPENDIX A

DEFINITION OF RESOURCE CAPABILITY LEVELS  
CA FORMS 1





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Wild Horses Specialist Name Gerald Thygerson

Date \_\_\_\_\_

Resource Capability Level 1 (Define the highest priority for management)

Little Book Cliffs Wild Horse Area

Resource Capability Level 2 (Define the second highest priority for management)

1,203 acres adjacent to the Little Book Cliffs Wild Horse Area that  
some of the horses use in the winter time.

Resource Capability Level 3 (Define the third highest priority for management)





APPENDIX B

MANAGEMENT PRACTICES  
CA FORMS 2

Resource Name Wild Horse

Specialist Name Gerald Thompson Date                     

Describe the types of management that you would use in PCL 1 areas.

The Little Rock Cliffs Wild Horse Management Plan has been in effect since 1979.

Describe the types of management you would use in PCL 2 areas.

The Little Rock Cliffs Wild Horse Management Plan has been in effect since 1979.

Describe the types of management you would use in PCL 3 areas.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Wild Horses

Specialist Name Gerald Thygerson Date \_\_\_\_\_

Describe the types of management that you would use in RCL 1 areas

The Little Book Cliffs Wild Horse Management Plan has been in effect since 1979.

Describe the types of management you would use in RCL 2 areas

The Little Book Cliffs Wild Horse Management Plan has been in effect since 1979.

Describe the types of management you would use in RCL 3 areas





APPENDIX C

DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS  
CA FORMS 3

Specialist Name Gerald Thompson Area Number (from overlay) \_\_\_\_\_

Resource Wild Horses RCL (1, 2, 3) \_\_\_\_\_

Date \_\_\_\_\_

Description of Area (species, number of acres, effects, etc.)

The wild horse area is located northeast of Grand Junction. It contains 27,772 acres, of which 27,000 are public and 772 acres are private. The estimated herd size is around 95 horses.

Comments for RCL

The area is one of three dedicated wild horse areas in the United States. It was also dedicated in the memory of Valma B. "Wild Horse Annie" Johnson. It is one of the few areas where cows have been excluded from the range and the area dedicated to horses.





CAPABILITY ANALYSIS FORM 3  
RESOURCE CAPABILITY LEVEL DESCRIPTIONSSpecialist Name Gerald Thygerson Area Number (from overlay) \_\_\_\_\_Resource Wild Horses RCL (1, 2, 3) \_\_\_\_\_

Date \_\_\_\_\_

Description of Area (Species; number of acres, miles, etc.)

The wild horse area is located northeast of Grand Junction. It contains 27,772 acres, of which 27,065 are public and 707 acres are private. The estimated herd size is around 65 horses.

## Rationale for RCL

The area is one of three dedicated wild horse areas in the United States. It was also dedicated to the memory of Velma B. "Wild Horse Annie" Johnson. It is one of the few areas where cows have been excluded from the range and the area dedicated to horses.





## 3.12 CULTURAL RESOURCES

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### 3.12 CULTURAL RESOURCES

#### RESOURCE AREA PROFILE

##### DESCRIPTION

Cultural resources are known to occur throughout the 1,206,035 acres of public land administered by the BLM in the Grand Junction Resource Area. Currently 1,627 cultural resources are managed by the BLM.

Cultural resources in the resource area include 1,460 archaeological and 167 historical sites. Of the 1,627 known cultural resource sites, 167 are high priority, 141 are moderate priority, and the remainder are low priority. Site priorities indicate a site's potential to yield significant information and reflect its function or uniqueness.

Types of archaeological sites that have been located are lithic scatters, hunting sites, hill-butcher sites, hunting racks, quarry sites, temporary camps, extended camps, single habitation sites, multiple habitation sites, pit houses, wickiups, rock shelter sites, granaries, cists, food processing areas, burial sites, petroglyph and pictograph panels and isolated artifacts. No sites are on the National Register for Historic Places; however, 161 sites are considered eligible for the register.

One hundred sixty-seven (167) historic sites have been recorded in the resource area. Trails, forts, toll and wagon roads, stage stations, hotels, resorts, bridges, homesteads, ranches, railroads, towns, schools, mines, mills, unique structures and sites represent the range of sites that have been recorded. These sites are associated with farming, ranching, mining, commerce, transportation, and exploration activities that have occurred between the eighteenth and twentieth centuries. No BLM sites are on the National Register of Historic Places, but 6 sites are considered to be eligible for the Register.

The major historic patterns of west-central Colorado were farming, ranching, mining, and commerce. (See Table 1 42.14(?) for specific site types and characteristics).

The river valleys, especially the Grand Valley, protected from severe weather by the surrounding mountains and adequately watered were used for farming. The valley soils also proved to be rich and arable. These conditions led to development of the area's fruit and agricultural industries. The valley floors also provided natural transportation routes. These lands offered the prerequisites for settlement in the 19th century--available land, adequate water, and accessibility.













The plateaus were not heavily settled by Euro-Americans because of the dry climate and lack of access. However, these lands were used by stockmen and a few dryland farmers.

## CONDITION AND TREND

The condition of each cultural resource varies. Some sites are being preserved through active management or through locational attributes. Other sites are being destroyed by acts of man or nature. For site specific information, refer to the site summary file located in the cultural resource inventory files. Substantial numbers of site data are recorded in the archives of the Colorado State Historic Preservation Office and the Grand Junction Resource Area office. Data recorded in these archives is the most common form of preservation.

The trend of cultural resource sites is generally downward. Cultural resources have their greatest value in place. Additional cultural resources are discovered each year due to surveys required prior to surface-disturbing activities. At the same time, sites are being destroyed, to some degree, through erosion, site decay, vandalism, "pothunting", or development of other resources.

## EXISTING MANAGEMENT SITUATION

### CURRENT MANAGEMENT

The cultural resource laws set forth procedures for BLM to follow and are designed to protect cultural resources and cultural resource information. Included in these laws is a mandate for the State Historic Preservation Officer (SHPO) to design a statewide management plan for cultural resources. The Colorado State SHPO has produced a draft of an anthropological research project as part of the development of the resource protection planning project (RP3). The objective of the project is to organize existing information about prehistory, historical archaeology, and ethnohistory to develop significant evaluation criteria and to direct government sponsored or required research.

The BLM is supposed to cooperate with the SHPO's plan in the management of cultural resources under its jurisdiction. These procedures are found in 36 CFR Part 61. The SHPO's plan directs the efforts of preservation and data collection on a statewide basis. The Grand Junction Resource Area then







develops cultural resource management plans, as has been done with the Grand Junction Resource Area Cultural Resources Management Guide, to facilitate site evaluation. These sites are managed according to the guide. This document has been prepared in conjunction with the Colorado State Preservation Office's RP3 efforts.

## Surveys

Because the State has no final statewide master plan, BLM's present management procedures for cultural resources are largely reactive. When BLM or private industry proposes an undertaking, the area of impact is surveyed for cultural resources. One of three classes of survey is conducted:

Class I. A Class I inventory provides a review and synthesis of the existing cultural resource information. Prior to all project implementation or further inventory, a preview of existing inventory information is required to identify all recorded cultural resource sites. Class I inventories are often done on a district or regional level to provide a comprehensive overview of the prehistory and history of the region.

Class II. A Class II inventory usually follows a Class I inventory. A Class II inventory involves a sampling strategy to obtain a meaningful and representative sample of a defined region. It is a tool used for planning and management purposes, as it provides a database for making an objective estimate of the nature and distribution of cultural resources within a study area.

Class III. A Class III inventory is an intensive field survey accomplished by a 100% pedestrian survey. The objective of a Class III inventory is to identify and record from surface and exposed profile indications all cultural resource sites within a specified area. This level of inventory is required for any actions that may result in an adverse effect on cultural resources.

One thousand five hundred and sixty cultural resource surveys have been conducted. The majority has been site-specific Class III cultural resource examinations. A synopsis of all inventories performed in the resource area is located in the cultural inventory files available in the Grand Junction Resource Area office. The areas that have been examined at a Class III level are indicated on overlay CR 2.11-1.

An effort to provide maximum information concerning the possible locations and numbers of cultural resources has been made for the Grand Junction Resource Area. Observations made concerning archaeological sites recorded as a result of nonrandom and random cultural resource examinations have yielded information useful in managing archaeological resources.







## Site Patterns and Locations

Gross site evaluations for the resource area are based on both indepth reports; i.e., Hibbets 1979, Nickens 1980, Kvamme 1983, and on subjective long term field experience of the BLM district and area. Archaeologists, particularly the Kvamme (1983) predictive model, indicate that archaeological sites in the Grand Junction Resource Area tend to share the following characteristics:

1. Sites are most often found facing the south, southeast, or southwest.
2. Most sites are located within 1/2 mile of a permanent water site.
3. Sites are most frequently located between 5,000 and 8,000 feet elevation.
4. Sites are most frequently located on the second or third bench above a present or past water source.
5. Sites are most often found on flat areas or a gentle slope.
6. Sites are most often found in areas that are close to food sources.

These are all elements which were taken into consideration when choosing areas in which prehistoric people would like to have lived or worked. In short, the type of site recorded in a given area or the probability of locating a site in that area depends upon the prehistoric social or economic activity involved and the potential of the area to fulfill requirements necessary for those activities.

## Environmental Analysis and Decision

Following a survey, the effects of the proposed action on the cultural resources are analyzed and included in an environmental impact statement or assessment.

A decision on whether or not to approve the project is then made. Generally no further considerations are given the cultural resources. Most sites are not actively managed or analyzed. However, occasionally a site is managed under a memorandum of agreement.







## Recordation

Information gleaned from cultural resource surveys is recorded in a cultural resource data bank. This bank contains all known cultural resource information and is updated daily. The system was designed to provide data and locations for all known cultural resource sites and all areas examined for cultural resources.

## SUPPLY

Proposed actions create the need for cultural resource inventories on the lands to be affected by the proposed undertakings. Thus, while cultural resources are a fixed commodity, our knowledge of the number of sites and data base from which to work are ever increasing.

## DEMAND AND DEPENDENCY

a. Scientific Knowledge/Pure Research. Cultural resources are used by scientists for analysis to garner the wealth of data they possess. The scientific study of these materials is one way to extract and preserve important data. The demand for cultural resource data for pure research is small but intense.

b. Public Interpretation. There is widespread interest and curiosity among the general public concerning cultural resources. The demand to view those resources is growing.

c. Educators. Educators place demand upon cultural resources for the sake of research.

d. Artifact Collecting. The collection of archaeologic and historic artifacts or remains is a popular hobby for thousands of Americans. Many "weekend thieves" are merely well-meaning hobbyists who are unaware of the destruction and damage they cause.

e. Vandalism. Some vandalism is purposeful and places a great demand on our finite cultural resources. Unauthorized collecting or working with federally administered cultural resources can result in stiff fines and jail sentences.







f. Black Market. There is a large demand among the populace for cultural materials. Because of the rarity of many artifacts and the status associated with owning such items, considerable monies are involved in black market type activities. This economic exploitation puts great pressure on archaeological and historical resources. Efforts to control this problem include the use of patrols (when funding is available) and the education of public school students. Lectures on the value and use of these artifacts have been a regular part of the cultural resource program since 1976. Stiff fines and jail sentences were recently approved for persons committing these crimes (the Archaeological Resources Protection Act of 1979).

g. Contracting. Cultural resource contractors, trained in archaeology, history, or both, examine an area for cultural resources, evaluate the findings according to government guidelines and write reports containing their findings and recommendations. The Grand Junction Resource Area provides free cultural resource services for small business and for the government. Large businesses are required to obtain their own cultural resource examinations.

h. Artifact Storage. The need for artifact curatorial facilities is increasing. Institutions now are charging BLM and private contractors for curatorial facilities. BLM now requires most contractors to have any materials removed from land administered by the BLM curated at Mesa College.

## CAPABILITY ANALYSIS

### DEFINITIONS OF RESOURCE CAPABILITY LEVELS

See Appendix A, Capability Analysis Form 1.

### MANAGEMENT PRACTICES

See Appendix B, Capability Analysis Form 2.

### DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

See Appendix C, Capability Analysis Forms 3.





# CAPABILITY ANALYSIS FORM 1 DEFINITIONS OF RESOURCE CAPABILITY LEVELS

## APPENDIX A

Resource Cultural Resources

Very High

Date November 15, 1988

## DEFINITIONS OF RESOURCE CAPABILITY LEVELS CAPABILITY ANALYSIS FORM 1

Resource Capability Level 1 (Define the highest priority for management)

Manage high priority sites. All known or discovered sites would be recorded, but only high priority sites would be managed as outlined in the LJA Cultural Resource Management Guide 47.14 Appendix A. Prescribed management could range from restoration to maintenance of a site. Moderate and low sites would be managed according to law. Compliance with all major cultural resource legislation. Areas of proposed project impacts would be inventoried.

Resource Capability Level 2 (Define the second highest priority for management)

Manage high and moderate priority sites. All known or discovered sites would be recorded but only high and moderate priority sites would be managed according to the Cultural Resource Management Guide. Low priority sites would be managed according to law. Compliance with all major cultural resource legislation. Inventory areas with potential project impacts.

Resource Capability Level 3 (Define the third highest priority for management)

All known or discovered sites would be recorded. High, moderate, and low priority sites would be actively managed according to the LJA Cultural Resource Management Guide. Evaluate all cultural resources for National Register of Historic Places potential whether project or nonproject impacted. Compliance with all major cultural resource legislation. Intensive level cultural resource protection and inventory. Inventory areas recommended on research needs rather than potential project impacts.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELSResource Cultural Resources Specialist Name Mary K. HighDate November 15, 1983Resource Capability Level 1 (Define the highest priority for management)

Manage high priority sites. All known or discovered sites would be recorded, but only high priority sites would be managed as outlined in the GJRA Cultural Resource Management Guide 42.14 Appendix A. Prescribed management could range from restoration to maintenance of a site. Moderate and low sites would be managed according to law. Compliance with all major cultural resource legislation. Areas of proposed project impacts would be inventoried.

Resource Capability Level 2 (Define the second highest priority for management)

Manage high and moderate priority sites. All known or discovered sites would be recorded but only high and moderate priority sites would be managed according to the Cultural Resource Management Guide. Low priority sites would be managed according to law. Compliance with all major cultural resource legislation. Inventory areas with potential project impacts.

Resource Capability Level 3 (Define the third highest priority for management)

All known or discovered sites would be recorded. High, moderate, and low priority sites would be actively managed according to the GJRA Cultural Resources Management Guide. Evaluate all cultural resources for National Register of Historic Places potential whether project or nonproject impacted. Compliance with all major cultural resource legislation. Intensive level cultural resource protection and inventory. Inventory areas recommended on research needs rather than potential project impacts.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

APPENDIX B

Resource Name: Cultural MANAGEMENT PRACTICES  
CAPABILITY ANALYSIS FORM 2

Specialist Name: Mary E. High Date: November 1981

Describe the types of management that you would use in DCL 1 areas

Manage only high value cultural resources consistent with multiple use concepts and preservation law.

36 CFR VIII 800 - Determine feasible management for each project.  
Cultural resource inventories are thoroughly field determined.  
Evaluate cultural resources in project areas to determine  
Avoid all adverse effects of project or feasible or mitigate  
All eligible or likely to be eligible sites.  
No further work for not eligible areas.

Administer data.

Testing and use predictive model in proposed project areas.

Describe the types of management you would use in DCL 2 areas

Manage high and moderate value cultural resources consistent with multiple use concepts and preservation law.

36 CFR VIII 800 - (see above).

Administer Data.

Upgrade data levels for cultural resources in potential project areas through Class III's and predictive modeling.

Describe the types of management you would use in DCL 3 areas

All sites would be managed according to the BIA Cultural Resource Management Guide, consistent with multiple use concepts and preservation law.

36 CFR VIII 800 (see above).

Administer data.

Recommend cultural resources inventories in areas with research potential as a primary concern.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Cultural Resources

Specialist Name Mary K. High Date November 1983

Describe the types of management that you would use in RCL 1 areas

Manage only high value cultural resources consistent with multiple use concepts and preservation law.

36 CFR VIII 800 - Determine federal involvement for each project.  
Cultural resource inventory and inventory level determined.  
Evaluate cultural resources in project areas to NRHP.  
Avoid all adverse impacts if prudent or feasible or mitigate  
all eligible or likely to be eligible sites.  
No further work for not eligible sites.

Administer data.

Testing and use predictive model in proposed project area.

Describe the types of management you would use in RCL 2 areas

Manage high and moderate value cultural resources consistent with multiple use concepts and preservation law.

36 CFR VIII 800 - (see above)

Administer Data.

Upgrade data levels for cultural resources in potential project areas through Class III's and predictive modeling.

Describe the types of management you would use in RCL 3 areas

All sites would be managed according to the GJRA Cultural Resource Management Guide, consistent with multiple use concepts and preservation law.

36 CFR VIII 800 (see above)

Administer data.

Recommend cultural resources inventories in areas with research potential as a primary concern.





## 3.13 RECREATION, OFF-ROAD VEHICLES AND VISUAL RESOURCES

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OVERLAYS

Carlos, list any overlays here.





### 3.13 RECREATION, OFF-ROAD VEHICLES, AND VISUAL RESOURCES

#### RESOURCE AREA PROFILE

#### RECREATION

##### Recreational Use in the Grand Valley

Two-thirds of all recreational use on public land in the resource area occurs in the Grand Valley, which is in close proximity to residential areas. In 1983, the top five activities in the Grand Valley were motorcycle riding, parties, four-wheel driving, target shooting, and day hiking. Table 3.13-1 shows the number of visitor days in each use.

TABLE 3.13-1  
TOP FIVE RECREATION USES IN THE GRAND VALLEY

USE	VISITOR DAYS
Off-road vehicle - motorcycle	60,300
Parties	30,400
Off-road vehicle - four-wheel drives	21,300
Target shooting	14,900
Day hiking	13,900

Other major activities in the Grand Valley are off-road vehicle competitive events, small game hunting, horse riding, picnicking, jogging, camping, group events, fishing, specialized sightseeing, and a variety of other activities that might best be described as general leisure.

Several areas in the Grand Valley have unique geographic/ecologic features. The most noteworthy use areas in this category are Coal Canyon by Cameo, Cactus Park, Little Park Road, Snooks Bottom, and the lower Pollack Canyon area. The remainder of the Grand Valley is typically called "the desert," an area over 100,000 acres in size, consisting primarily of rolling adobe clay hills. Most of the off-road vehicle use takes place in the desert.







## Recreational Use Outside the Grand Valley

The remaining recreational use on public land in the resource area occurs outside the Grand Valley. Table 3.13-2 shows the top five activities outside the Grand Valley in 1983.

TABLE 3.13-2  
TOP FIVE RECREATION USES OUTSIDE THE GRAND VALLEY

ACTIVITY	NUMBER OF VISITOR DAYS
Big game hunting - deer and elk	38,565
Developed recreation site use	22,400
Camping, undeveloped sites	13,500
Floatboating (river use)	11,500
Hiking, day and overnight	10,000

Some of the other major activities outside the Grand Valley are small game hunting, waterfowl hunting, fishing, extensive off-road vehicle use, horse riding, group events, and general leisure.

Four developed recreation sites and eighteen undeveloped sites receive most of the use outside the Grand Valley.

### a. Developed Recreation Sites

1. Miracle Rock. Low day and overnight use.
2. The Falls (Potholes). Heavy day use, parties. Significant overnight use.
3. Mud Springs. Heavy day use, group picnic site. Significant overnight use.
4. Dominguez Recreation Site. Moderate day and overnight use. Stream fishing. Trailhead to Big Dominguez Creek Canyon.

### b. Undeveloped Recreation Areas

1. Bangs Canyon/Northeast Creeks (40,000 acres). Important backcountry, horse riding, off-road vehicle trail oriented outdoor recreation opportunities on the doorstep of Grand Junction. High scenic and natural values. Moderate use.
2. Black Ridge/Ruby Canyon Intensive Recreation Management Area (IRMA) - (68,000 acres). Outstanding backcountry and riverine recreation. Extensive canyon hiking opportunities. Moderate floatboating use. High quality unique scenic and natural values.







3. Granite Creek (15,000 acres). Remote scenic desert canyon. High quality backcountry opportunities.
4. Gunnison River (15 miles). Attributes suitable for scenic river designation. Moderation floatboating opportunities in scenic desert canyon.
5. Big and Little Dominguez Creeks (12 miles on each creek). Outstanding scenic canyon hiking opportunities.
6. Dominguez Mesas. Extensive chaining area. Recreation often related to firewood and Christmas tree cutting.
7. Unaweep Canyon (45 miles). Scenic canyon traversing desert to montane settings.
8. The Palisade (2,000 acres). Scenic landscape feature near Gateway, Colorado.
9. Sinbad Valley (15,000 acres). Highly scenic geologically unique setting.
10. Sewemup Mesa (15,000 acres). The epitome of a large, remote, isolated mesa. Outstanding natural and high scenic values.
11. Dolores River (31 miles). High scenic values. Important riverine recreation and sightseeing.
12. The Book Cliffs. Important recreation opportunities being sharply impacted by oil and gas development.
13. Demaree Canyon (32,000 acres). One of the few remaining areas of high natural values in the Book Cliffs.
14. Hunter/Garvey Canyon (19,000 acres). Relatively untouched canyon system in remote, rugged, scenic Book Cliffs.
15. South Shale Ridge/Coon Hollow (22,500 acres). Unique extensive outstanding display of colorful badlands Wasatch Formation, intricately sculptured hoodoos, monoliths, and other interesting features.
16. Little Book Cliffs Wild Horse Area (27,772 acres). Wild horse range in scenic Book Cliffs.
17. Roan Creek Drainage - Oil Shale Country. Many areas of moderate to outstanding scenery and general outdoor recreation opportunities. Both physical and legal access restrictions limit public use.
18. Plateau Creek Drainage. Important big game hunting area. Some fishing. Review Jerry Creek Reservoirs public fishing access.







## Origins of Use and Significance

About 90 percent of the recreational use on public land in the Grand Junction Resource Area originates from Mesa County. This compares to other public land in a 150-mile radius. The significance of non-local use is masked by use originating locally from the large Grand Valley population. Typical recreation use by non-local visitors involves traditional activities such as big game hunting, camping, sightseeing, floatboating, and off-road vehicle use.

As the population of the Grand Valley grows, it is likely that an even greater percentage of the total use will originate locally. Population growth in the Grand Valley has been strongly related to uranium, coal, oil and gas, and oil shale activities. Fluctuations in these minerals industries will continue to have a significant bearing on total Grand Valley population and related recreational use of nearby public land.

Several areas of public land provide regionally important recreational opportunities for off-road vehicle use, backcountry recreation, big game hunting, and sightseeing.

The quality of recreation opportunities of both local and regional significance are being rapidly reduced in many areas. Mineral development projects that increase the local population are having an often profound effect on the recreation resource base. In particular, uranium mining in the Gateway area has "opened up" vast tracts of land but sharply diminished the attractiveness of the area for the more highly desired recreation pursuits. A similar pattern is now occurring in all of the Book Cliffs from extensive oil and gas development. The very few remaining small, untouched portions of the Book Cliffs will soon receive treatment similar to the rest of the Book Cliffs.

## Recreation Opportunity Spectrum (ROS) Classifications

Public land in the Grand Junction Resource Area has classified according to the recreation opportunity spectrum (ROS) guidelines (BLM Manual 8310). Table 3.13-3 shows the acreage in each ROS class in the Grand Junction Resource Area.







TABLE 3.13-3  
ROS CLASSIFICATION TABLE

ROS Class	Acres <sup>1/</sup>	Percentage of Resource Area in Each Class
Primitive	23,618	1.2%
Semi-Primitive Non-Motorized	278,253	13.8%
Semi-Primitive Motorized	1,120,224	53.4%
Roaded Natural	389,275	19.2%
Rural	149,513	7.4%
Urban	60,892	3.0%
Total	2,021,775	100.0%

<sup>1/</sup> Includes public land.

#### OFF-ROAD VEHICLES

Immense opportunities are available for off-road vehicle use in the Grand Junction Resource Area. Thousands of acres of rolling open desert land in the Grand Valley are exceptionally suitable for trail riding, hill climbing, racing, and cross country travel. Relatively mild weather extends the use season to nearly year-round opportunity. Access to public land in the Grand Valley is convenient and close. In addition, many back roads and trails throughout the Grand Junction Resource Area provide extensive vehicle access opportunities.

In general, two categories of off-road vehicle use occur in the Grand Junction Resource Area - casual and competitive. The casual use includes play oriented off-road vehicle activity and other activities such as hunting where off-road vehicles are used for access.

A blanket off-road vehicle permit authorizes \_\_\_\_\_ competitive motorcross races each year at Cycle Park on 27-1/4 Road. The desert east of Cycle Park is also included under this permit for the more extensive desert motorcycle races that occur about seven times each year. Cycle Park is used as the staging area for these races. Four-wheel off-road vehicle racing has occurred in the desert north of Grand Junction in the past, but no races have been sponsored since 1980.

At present on a few public land areas are officially limited or closed to off-road vehicle use under the Bureau's off-road vehicle regulations.







1. The Beehive Road near Mesa, Colorado is closed seasonally (December 1 to May 1) to protect elk winter range. Industrial use by energy companies is provided for; however, no drilling is allowed.

2. The Divide Road east of Douglas Pass is closed seasonally (October 1 to June 1) to vehicles over 12,000 lbs. to protect the road surface.

3. In conjunction with the U.S. Forest Service, the county road to the Big Dominguez Campground is closed late fall through spring to protect the wet road surface from vehicle damage (closure dates depend on weather conditions).

4. The Lands End chainings (approximately 2 square miles) have a seasonal closure in conjunction with the U.S. Forest Service to protect big game winter range (no motorized vehicles December 1 to April 30).

5. A fenced 100-acre sensitive plant study site, located in the Whitewater Hill area, is closed to vehicle use.

6. The Unawep Seep Natural Area (120 acres) is closed to vehicle use to protect sensitive wildlife and plant habitat.

In addition to the above closures and limitations, several closures and limitations of an emergency nature are being seriously considered.

1. About one-half mile of new jeep road has been created in the past two years at the Rattlesnake Canyon arches. New spur roads continue to be made. The new jeep roads would be closed at a location approximately one-quarter mile up the road south of the first arch.

2. The public land along lower Flume and Pollack Canyons within the Black Ridge Wilderness Study Area has seen increasing, indiscriminate cross country off-road vehicle use. About 1 mile of existing jeep road and about 1,000 acres of public land would be closed to off-road vehicle use.

3. About 1 mile of deteriorated jeep road and spur roads created by firewood cutters in the last two years occur within the Dominguez Wilderness Study Area immediately downstream from the Dominguez Recreation Site.

## VISUAL RESOURCES

The visual resources of the Grand Junction Resource Area have been classified according to BLM Manual 8400. This manual considers visual quality, visual sensitivity, and public visibility, resulting in a visual resource management







(VRM) classification of I, II, III, or IV. Class I areas are the most sensitive, unique, and scenic areas, while Class IV areas are the least scenic or sensitive landscapes. Table 3.13-4 shows the acreage and percentage of each VRM class in the Grand Junction Resource Area.

TABLE 3.13-4  
SUMMARY OF VISUAL RESOURCE MANAGEMENT CLASSES

Class	Acreage <sup>1/</sup>	% of GJRA
II	672,194	33%
III	320,576	16%
IV	1,029,005	51%

<sup>1/</sup> Includes private property.

The trend in landscapes in the Grand Junction Resource Area is steadily and significantly away from natural and pastoral and toward residential and industrial. Features associated with these landscapes are utilities including electrical power generation, railroads, highways, pipelines, and various residential and urban areas with their provision of civilized services. This trend will likely continue.

A half dozen or more new underground coal mines are anticipated in the next ten years. Oil shale will probably have minor effects on the land base and major effects on society and the economy. And although uranium production may never return to levels of the past, changes in the landscape from the past mineral activity in the Gateway area are long term.

## EXISTING MANAGEMENT SITUATION

### RECREATION

#### Current Management

The Grand Junction Resource Area recreation management program has and continues to be severely constrained by budget limitations. The active functions that remain can be classified as (1) managing four developed







systems working, supervising the developed site cleanup contract, painting tables and logs, answering public information requests, and working with group events to find appropriate locations. The public has expressed a great concern over the lack of visitor supervision on public land. The greatest public concerns are at the heavier use areas within a 20-minute drive of the valley's urban areas. The biggest conflicts are with target shooting, off-road vehicle use (safety, noise, dust, harassment), large or rowdy parties, and illegal activities, particularly trash dumping.

### Supply-Demand Analysis and Dependency

The recreation opportunity spectrum (ROS) overlay, located in the recreation inventory, shows the spectrum of opportunities and settings available in the Grand Junction Resource Area. These settings range from primitive resource-dependent to developed facility-dependent, as explained in recreation inventory Appendix \_\_\_\_\_.

Most of the population of the Grand Valley depend on access to surrounding BLM land for at least a portion of their outdoor recreation activity.

### OFF-ROAD VEHICLES

#### Current Management

The resource area has no active management program to control or promote off-road vehicle use. However, most people feel that limiting off-road vehicle use to existing roads, trails, and a few large open riding areas would be a reasonable off-road vehicle management objective. Active off-road vehicle users comprise less than 15 percent of the public, and probably less than 20 percent of these users are totally against reasonable limitations on their sport.

### Supply-Demand Analysis and Dependency

Local demand for off-road vehicle use is high. Peak use occurs on spring and fall weekends.

The off-road vehicle use in the Grand Valley is highly dependent on public land. Use conflicts have increased as the Grand Valley population has increased resulting in now significant public demand for "doing something"







about the totally uncontrolled off-road vehicle use in the valley. A few landowners have indicated an interest in restricting off-road vehicle use on their land if the BLM would assist with similar efforts on adjacent public land.

Off-road vehicle users in the Grand Valley are in a unique position compared to most of the rest of the United States where heavy, uncontrolled off-road vehicle use is a thing of the past. The local users are accustomed to high quality, virtually unlimited off-road vehicle opportunities; and many have shown little restraint or concern for other land users, land and resource values, or the peace of nearby private property owners. The result has been predictable; a traditional demand to put reasonable restrictions on irresponsible off-road vehicle use.

## VISUAL RESOURCES

### Current Management

The Grand Junction Resource Area has been classified according to BLM Visual Resource Management Manual standards. The intent of the standards is to quantify whether or not a significant visual impact would result from a proposed project and to aid in mitigating adverse visual impacts. The most recent Colorado State Office policy has been to emphasize working with project proponents to accommodate and reasonably mitigate visual impacts.

### Supply-Demand Analysis and Dependency

The supply of visual resource qualities and public demand for these resources is taken into account in the VRM analysis which results in the visual resource management classifications. Class I features are of particular importance to both residents and visitors. Tourism, real estate values, and quality of life factors related strongly to the Class I areas and Class II areas.

## CAPABILITY ANALYSIS

### DEFINITION OF RESOURCE CAPABILITY LEVELS

See Appendix A, Capability Analysis Forms 1





## MANAGEMENT PRESCRIPTIONS

See Appendix B, Capability Analysis Forms 2

## DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

See Appendix C, Capability Analysis Forms 3





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Recreation-Specialist Management/Development Areas

Specialist Name Carlos Souza

Date November 1993

APPENDIX A

Resource Capability Level 1 (Define the highest priority for management)

DEFINITIONS OF RESOURCE CAPABILITY LEVELS  
CAPABILITY ANALYSIS FORMS 1

Areas of public land where the highest priority for management concerns are significant. These issues are categorized into two categories:

1. Areas where resource protection or management action is needed to ensure the continued availability of various recreational opportunities which are not readily available from other public or private sources. Recreation is the primary management objective.

2. Areas where active recreational management is needed to ensure the safety of the public and the quality of the recreational experience. Recreation is the primary management objective.

Resource Capability Level 2 (Define the second highest priority for management)

Areas where public recreation related issues are significant, but are related to ensuring the quality of the recreational opportunities. Recreation is the primary management objective in a multiple use perspective.

Resource Capability Level 3 (Define the third highest priority for management)

Areas where dispersed recreational use occurs but does not require active management.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Recreation-Special Management/Designation Needs

Specialist Name Carlos Sauvage

Date November 1983

Resource Capability Level 1 (Define the highest priority for management)

Areas of public land where recreation related public issues and management concerns are significant. These issues and concerns fall into two categories:

1. Areas where resource protection or management action is needed to ensure the continued availability of outdoor recreation opportunities which are not readily available from other public or private sources. Recreation is the principal management objective.
2. Areas where active recreational use management (people management) is needed to mitigate use conflicts and protect visitor health and safety. Recreation may not be the principal resource (land) management concern.

Resource Capability Level 2 (Define the second highest priority for management)

Areas where public recreation related issues and management concerns are significant, but are related to ensuring the continued availability of high quality dispersed recreational opportunities. Recreation is an important land use in a multiple use perspective.

Resource Capability Level 3 (Define the third highest priority for management)

Areas where dispersed recreational use occurs but other resource uses dominate land use





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource ORV Specialist Name Carlos Sauvage

Date November 1983

Resource Capability Level 1 (Define the highest priority for management)

Areas of public land where ORV related public issues and management concerns are significant. ORV designations will be made to protect resources, promote user safety, minimize user conflicts and to identify areas suitable for casual use and competitive events based on public demand.

Resource Capability Level 2 (Define the second highest priority for management)

Areas of public land where ORV related public issues and management concerns are moderate and more general in nature. Where needed, designations may be made to protect natural resources and minimize user conflict.

Resource Capability Level 3 (Define the third highest priority for management)





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Visual Resource Management Specialist Name Carlos Sauvage

Date November 1983

Resource Capability Level 1 (Define the highest priority for management)

VRM Class I and II areas. These are areas which have the highest visual resource management concern based on the combined importance of scenic quality, visibility, and visual sensitivity.

Resource Capability Level 2 (Define the second highest priority for management)

VRM Class III and IV areas. These are areas which have moderate to low resource management concern based on the combined importance of scenic quality, visibility, and visual sensitivity.

Resource Capability Level 3 (Define the third highest priority for management)





APPENDIX B

Resource Name \_\_\_\_\_

Specialist Name \_\_\_\_\_

MANAGEMENT PRACTICES  
CAPABILITY ANALYSIS FORMS 2

Describe the types of management that you will use in this area

1. Areas where resource protection is needed. This includes AIC designations for nature, scientific, historic, or other values. Intensive recreation management areas (e.g., wilderness) and administrative designations of various types. Areas suitable for group use, recreation, or other purposes. Appropriate withdrawals to protect resource values.
2. Areas where active recreation is needed. This includes areas of Bureau personnel during high use periods and to provide information and education programs with emphasis on visitor involvement, signage.

Describe the types of management you will use in this area

Ensure that conflicting uses are recognized and managed to protect each area's important resource characteristics. Some of the information/education materials may be developed to recognize the area. Designation of special use areas (such as no shooting or hunting for other events) may be appropriate.

Describe the types of management you will use in this area

Some information signs and materials may be provided to support the public needs for dispersed outdoor recreation opportunities. Interpretive or recreational use will generally be allowed. Regulations on other resource uses will follow established patterns and standards to ensure long-term protection of natural resource values. Use will not be constrained in the short term by recreation-related concerns.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name Recreation - Special Management/Designation NeedsSpecialist Name Carlos Sauvage Date November 1983Describe the types of management that you would use in RCL 1 areas

1. Areas where resource protection is needed: management actions could include ACEC designations for natural and/or scenic value, designation as an intensive recreation management area (implies the need for an activity plan), administrative designation of recreation use zones (such as no shooting zones or areas suitable for group uses), recreation lands designation, and pursuing appropriate withdrawals to protect recreation opportunities.
2. Areas where active recreation management is needed: active field presence of Bureau personnel during high use periods and in use conflict areas, active information and education program with brochures, news releases, activity involvement, signing.

Describe the types of management you would use in RCL 2 areas

Ensure that conflicting land uses are constrained to minimize adverse impacts to each area's important recreation opportunities. Some signing and information/education materials may be developed in response to public needs. Designation of special use zones (such as no shooting or suitable for group events) may be appropriate.

Describe the types of management you would use in RCL 3 areas

Some information signs and materials may be provided to support the public needs for dispersed outdoor recreation opportunities. Constraints on recreational use will generally be minimal. Restrictions on other resource uses will follow established multiple use principals to ensure long term protection of natural resource values, but will not be significantly constrained in the short term by recreation related concerns.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICES

Resource Name Off-Road Vehicles

Specialist Name Carlos Sauvage Date November 1983

Describe the types of management that you would use in RCL 1 areas

All of the "closed" and most of the "limited" designations would be made in these areas in response to public issue identification. To meet the significant public demand for off-road vehicle use areas near population centers there will be some "open" and "open-suitable for competitive events" designations.

Describe the types of management you would use in RCL 2 areas

Some "limited" designations may be made where resource management issues are significant. Where there are no significant land use issues, public lands will designated "open".

Describe the types of management you would use in RCL 3 areas





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name Visual Resource ManagementSpecialist Name Carlos Sauvage Date November 1983Describe the types of management that you would use in RCL 1 areas

VRM Class I and some highly important Class II areas may be designated as ACECs for visual resource protection. In Class I areas management activities will be severely constrained to maintain an ecologically natural landscape. In Class II areas management activities will be constrained as necessary to maintain a natural visual setting in the characteristic landscape.

Describe the types of management you would use in RCL 2 areas

In VRM Class III and IV areas management activities may result in noticeable landscape changes, but activities will be reasonably constrained so that unnatural visual impacts are minimized. In all cases proposed activities will be designed to attempt to fit in as much as reasonably possible into the characteristic landscape.

Describe the types of management you would use in RCL 3 areas





## 3.14 WILDERNESS RESOURCES

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## OVERLAYS

None (See Inventory)







### 3.14 WILDERNESS RESOURCES

#### RESOURCE AREA PROFILE

Seven wilderness study areas (WSAs) have been identified in the Grand Junction Resource Area. The Black Ridge Canyons WSAs are contiguous and are separated only by a single lane bulldozed road. Black Ridge Canyons West includes two contiguous WSAs in the Moab District in Utah. The Dominguez Canyon and Sewmup Mesa WSAs both include contiguous WSA lands in the Moab District.

In accordance with the "Wilderness Inventory Handbook", a WSA must be 5,000 acres or larger in size, natural and roadless in character and have either outstanding opportunities for solitude and/or outstanding opportunities for primitive and unconfined recreation. Supplemental values may be present but are not required. All WSAs in the Grand Junction Resource Area meet all the above criteria including supplemental values with one exception. Demaree Canyon was determined to lack outstanding opportunities for primitive and unconfined recreation. Also, it lacks any supplemental values. All other WSAs possess both outstanding opportunities for solitude and outstanding opportunities for primitive and unconfined recreation.

#### BLACK RIDGE CANYONS WSAs (CO-070-113/113A)(UT-060-116/117)

##### Description of Resource

These four contiguous WSAs, containing 77,530 acres of deep canyons, dissect the northern terminus of the Colorado Plateau (WI 2.14-1). A high ridge spans the southern portion, and the Colorado River forms the northern boundary of the WSAs. Vegetation consists of an open pinyon-juniper woodland with occasional clearings of sagebrush, grasses and grassy meadows, pinyon-juniper, and riparian species such as willow and cottonwood. These WSAs are generally free of the imprints of man. However, several range projects and a few structures have slightly affected the unit's naturalness.

Topographic diversity, unusual landforms such as arches and spires, and water courses provide for outstanding hiking, backpacking, floatboating,







fishing, sightseeing, and other activities. Topographic diversity together with the unit's large size and configuration combine to provide outstanding solitude.

A rare butterfly, two endangered fish (Colorado River), a concentration of natural arches, and cultural values and paleontological values supplement the unit's wilderness values.

#### Condition and Trend

The wilderness characteristics of the unit are stable. Several range projects in the unit have affected its naturalness only slightly.

#### DOMINGUEZ CANYON WSA (CO-070-150/030-363)

#### Description of Resource

This 75,800 acre unit is located on the eastern flank of the Colorado Plateau and is principally made up of the Big and the Little Dominguez Canyons (Overlay WI 3.14-1). These drainages have helped form isolated northeast-southwest trending mesas. Vegetation ranges from riparian vegetation and Douglas-fir in the canyons to pinyon-juniper woodlands with sagebrush parks on the mesas. Overall, the WSA is generally free of the imprints of man. Some range projects and two-wheel tracks and revegetation trails are present, but their impact on naturalness is minimal.

The rugged and scenic nature of the area's canyons and mesas provide outstanding opportunities for solitude and primitive and unconfined recreation. Outstanding recreation activities include hiking, horseback riding, cross country skiing, photography, and sightseeing.

Geologic features, paleontological values, cultural values, and rare and endangered plants supplement the unit's wilderness values.

#### Condition and Trend

The wilderness characteristics of this unit are being maintained; however, ORV activities near the southeastern border area are negatively impacting the naturalness of this area by destroying vegetation and creating new trails.







## THE PALISADE WSA (CO-070-132)

### Description of Resource

This 26,050-acre WSA is characterized by vertical cliffs, rugged canyons and rolling to flat desert valley bottoms dissected by gulches. Vegetation ranges from pinyon-juniper and desert shrubs in the lower elevations to aspen and ponderosa pine in some of the upper drainages. Grasslands, intermixed pinyon, juniper and oak brush comprise the vegetation of the upper elevations. Although there are several imprints of man within the WSA, it is primarily natural in character.

Heavy vegetation and the many gulches and drainages in the lower elevations help to provide outstanding opportunities for solitude. The unit's rugged and varied landscape provides outstanding opportunities to hike, backpack, sightsee, and study nature.

The WSA's geologic features and a rare butterfly supplement the unit's wilderness values.

### Condition and Trend

The wilderness characteristics of the unit are generally stable. Some CRV use in the eastern wing of the unit is removing vegetation and creating new trails in drainage bottoms.

## SEWEMUP MESA WSA (CO-070-176/030-310A)

### Description of Resource

This 19,140-acre WSA consists of two prominent topographic features: the sloping mesa top of Sewemup Mesa and the eastern fringe of the collapsed salt dome of Sinbad Valley (Overlay WI 2.14-1). Sewemup Mesa is an isolated mesa top with sheer cliff faces and is dissected by shallow canyons. Pinyon-juniper woodlands dominate the top, and a combination of pinyon-juniper woodlands, sagebrush flats, and grassy meadows are present in the valley. The unit is primarily natural in character.

Outstanding solitude is created by topographic and vegetative screening and a canyon system that helps to disperse people. The highly scenic landscape helps to provide outstanding opportunities for hiking, backpacking, scenic viewing, nature study, and technical rock climbing.







The mesa's rich history, prehistory and geologic and ecological values supplement the unit's wilderness values.

#### Condition and Trend

The wilderness characteristics of the unit are stable.

#### LITTLE BOOK CLIFFS WILD HORSE AREA (CO-070-066)

##### Description of Resource

This WSA consists of 26,525 acres and is characterized by deep canyons and mesas (Overlay WI 2.14-1). Part of the southern boundary is the 2,000-foot high face of the Book Cliffs (Overlay WI 2.14-1). Vegetation in the canyons consists primarily of big sagebrush, rabbitbrush, and fourwinged saltbush. Pinyon-juniper woodlands dominate most of the upland area. Imprints of man are generally lacking except along the periphery where oil and gas development has affected the unit's naturalness. Two wells are inside the southeastern corner of the WSA, and several others have penetrated the Round Mountain area and the northern boundary. All leases under development were issued prior to the wilderness study area designation and, therefore, the lessees have valid existing rights which allows development.

The unit's overall size, wild horse herd, scenic beauty, and topographic diversity provide outstanding opportunities for solitude and primitive recreation. Outstanding opportunities exist in the unit for horseback riding, hiking, backpacking, photography, scenic viewing and viewing of wild horses.

#### Condition and Trend

The naturalness of the unit is declining in the general area of oil and gas development. The wilderness character has been impaired in the location of the wells and roads.

#### DEMAPEE CANYON (CO-070-009)

##### Description of Resource

This WSA consisting of 21,050 acres is a series of deep canyons and ridges trending north and south from the Book Cliff escarpment, whose base generally forms the southern boundary of the unit (Overlay WI 2.14-1).







Vegetation is scattered pinyon-juniper and dense mountain brush on the higher elevations and sagebrush and saltbush in the lower elevations. Imprints of man are minimal in the unit except for the southern and southwest boundary where oil and gas wells and roads have significantly impacted the naturalness of the unit.

The highly dissected topography caused by the series of canyons and ridges provide outstanding opportunities for solitude. Outstanding opportunities for primitive and unconfined recreation are not present in the unit. There are no supplemental values.

#### Condition and Trend

The naturalness of the unit is declining in the general area of oil and gas development. The wilderness character has actually been lost in those areas where well pads and roads have been constructed.

### EXISTING MANAGEMENT SITUATION

#### CURRENT MANAGEMENT

In accordance with Section 603 of the Federal Land Policy and Management Act, the BLM is required to manage all lands under wilderness review so as not to impair their suitability for wilderness designation. Specific guidance for interim management is provided in BLM's "Interim Management Policy and Guidelines for Lands Under Wilderness Review".

Under the interim management guidance, a proposed activity in a WSA must meet three requirements before it is approved. The activity must (1) be temporary, (2) not cause an impact that will not be substantially unnoticeable following reclamation, and (3) not change the WSAs suitability or nonsuitability for wilderness designation.

However, also under the interim management guidance, a proposed activity that has valid rights does not have to meet the above three requirements. Activities having valid existing rights are allowed to impair a WSA's wilderness characteristics provided there is no unnecessary and undue degradation. Restrictions placed on activities having valid existing rights must not unreasonably interfere with the enjoyment or the benefit of the right.

Valid existing rights apply to mining claims, mineral leases and right-of-way authorizations granted prior to October 21, 1976, the date of the passage of FLPMA.







Several WSAs have management framework plan (MFP) decisions pending on them. These are listed below:

#### Black Ridge Canyons

The Baxter Douglas/Glade Park MFP, November 1977, identified the Black Ridge area for some type of recreation designation such as "recreation lands" based partially on trying to preserve the canyons' primitive, scenic and geological values. A recreation management plan was to be prepared on the area. Special management was identified for the area to minimize environmental impacts.

#### Dominguez Canyon WSA, The Palisade WSA, and Sewemup Mesa WSA

The Whitewater MFP, May 1977, identified portions of these WSAs as "resource study areas" for wilderness review and identified certain use restrictions such as no new road construction and other stipulations to maintain these areas' natural character. Acreages identified were Dominguez Canyon, 45,000 acres; Sewemup Mesa, 16,000 acres; and The Palisade, 14,250 acres.

#### Dominguez Canyon WSA (Montrose District)

The Montrose District completed the Escalante MFP in June of 1971. It included the decision to designate a 21,000-acre area of the Little Dominguez Canyon as a primitive area pending a feasibility review which was to include a review by the local interest groups. Management called for a continuation of grazing, and placed restrictions on mineral development. No designation action has been taken to date.

#### SUPPLY-DEMAND ANALYSIS AND DEPENDENCY

Existing designated wildernesses in Colorado consist of 2,676,540 acres in 27 areas. Many of these areas are expected to reach their recreational carrying capacities sometime between the years 2000 and 2100 according to state-wide estimates. For additional supply-demand information, refer to the Wilderness Supply-Demand section of the inventory on file in the Grand Junction Resource Area Office.





## CAPABILITY ANALYSIS

### DEFINITIONS OF RESOURCE CAPABILITY LEVELS

See Appendix A, Capability Analysis Form 1

### MANAGEMENT PRACTICES

See Appendix B, Capability Analysis Form 2

### DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

See Appendix C, Capability Analysis Forms 3





APPENDIX A  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS  
DEFINITION Capability Analysis Form 1 LEVELS

Resource Wilderness Specialist Name W. Johnson

Date 11/7/83

Resource Capability Level 1 (Define the highest priority for management)

Areas found preliminarily suitable for wilderness designation which would be managed in accordance with the 1964 Wilderness Act, the 1972 ASPLA and the September 1981 Wilderness Management Policy.

Resource Capability Level 2 (Define the second highest priority for management)

Areas found outside existing NSFs that would enhance an area for wilderness as wilderness.

Resource Capability Level 3 (Define the third highest priority for management)



APPENDIX A  
DEFINITIONS OF RESEARCH CAPABILITY LEVELS  
Capability Analysis Form 1

CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Wilderness Specialist Name W. Johnson

Date 11/7/83

Resource Capability Level 1 (Define the highest priority for management)

Areas found preliminarily suitable for wilderness designation which would be managed in accordance with the 1964 Wilderness Act, the 1976 FLPMA and BLM's September 1981 Wilderness Management Policy.

Resource Capability Level 2 (Define the second highest priority for management)

Areas found outside existing WSAs that would enhance an area for management as wilderness.

Resource Capability Level 3 (Define the third highest priority for management)





APPENDIX B  
MANAGEMENT PRACTICES  
Capability Analysis Forms 2

Resource Name Wilderness

Specialist Name W. Johnson

Describe the types of management that you would use to manage this resource.

Wilderness management is provided for in the National Wilderness Act of 1963, amended in 1981. Specifically, the Act requires that the Secretary of the Interior (1) to establish a system of public lands management; (2) to provide for the protection, preservation, and enjoyment of the natural and cultural resources of the public lands; and (3) to provide for the protection, preservation, and enjoyment of the natural and cultural resources of the public lands.

Describe the types of management that you would use to manage this resource.

Describe the types of management that you would use to manage this resource.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name WildernessSpecialist Name W. Johnson Date 11/7/83Describe the types of management that you would use in RCL 1 areas

Wilderness management is provided for in the "Wilderness Management Policy" of September 1981. Specifically, this guidance states that Congress has directed BLM: (1) To perpetuate the wilderness resource by managing designated wilderness areas so that their wilderness character is not impaired; (2) To provide opportunities for the public to use for recreational, scenic, scientific, educational, conservation and historical purposes in a manner so as to leave the wilderness area unimpaired for future use and enjoyment as wilderness; and (3) To accommodate in wilderness areas certain activities, existing uses and private rights which are generally nonconforming to wilderness preservation and use.

Describe the types of management you would use in RCL 2 areasDescribe the types of management you would use in RCL 3 areas





## 3.16 SOCIAL AND ECONOMIC ENVIRONMENT

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### 3.16 SOCIAL AND ECONOMIC ENVIRONMENT

#### RESOURCE AREA PROFILE

##### POPULATION

The Grand Valley area has long been the transportation, communications, and service center for western Colorado and eastern Utah. Mesa County is consequently the most populous in western Colorado and is likely to remain so. Perhaps as much as 90 percent of the county's estimated 1983 population of 85,000 people live in the Grand Valley between Palisade and the Utah border.

Until the 1970's, population growth lagged behind the state average (Table 3.16-1). Since 1970, however, growth has been rapid, with an average annual increase more than twice the state average since 1977. In-migration, brought about by the development of energy fuels, has been the source of 87 percent of the population growth since 1970. The rapid pace of population increase appears to have virtually ceased since the 1982 closure or slowdown of a number of energy projects, most significantly the Colony Oil Shale Project.

The magnitude of future population growth is highly dependent on the degree to which western Colorado energy fuel resources are to be developed. The low projections included in Table 3.16-1 assume no significant energy development, in which case annual growth is expected to be less than one percent. The high projections are based on a relatively active level of energy development (about 400,000 BPD of oil shale) and result in average annual growth in excess of two percent, a rate similar to that of the early 1970's.

County demographic characteristics describing average age, age distribution, sex discrimination, and average household size, are not significantly different from state averages. The ethnic composition of the area is predominately white. People of Spanish origin make up the only sizeable ethnic group. Population density is low but when calculated on the basis of population per square mile of private land is close to that of counties in the Denver suburban area, perhaps 90 persons per square mile.





TABLE 3.16-1  
POPULATION: MESA COUNTY AND MUNICIPALITIES

	1970 Census <sup>1/</sup>	1977 Census <sup>2/</sup>	Annual % Growth Rate (1970-77)	1980 Census <sup>1/</sup>	Annual % Growth Rate (1977-80)	1983 Estimate <sup>3/</sup>	1990 Low Projection <sup>3/</sup>	2000 Low Projection <sup>3/</sup>	1990 High Projection <sup>3/</sup>	2000 High Projection <sup>3/</sup>
Mesa County	54,374	66,848	3.0	81,530	6.8	84,847	93,276	96,277	105,837	123,870
Collbran	225	293	3.8	344	5.5	344	348	342	353	392
De Beque	155	264	7.9	279	1.9	341	368	379	798	1,655
Fruita	1,822	2,328	3.6	2,810	6.5	2,950	3,206	3,338	4,655	6,002
Grand Junction	20,170	25,398	3.3	28,144	3.5	29,364	32,827	33,776	37,151	43,318
Palisade	874	1,038	2.5	1,551	14.3	1,729	1,844	1,867	2,522	3,740
Unincorporated	31,128	37,527	2.7	48,402	8.9	50,119	54,683	56,575	60,358	68,763
Colorado	2,209,596	2,625,308	2.5	2,889,964	3.3					

<sup>1/</sup> Colorado State Demographer's Office (1981).

<sup>2/</sup> U.S. Bureau of the Census (1979).

<sup>3/</sup> Mobil-Pacific Oil Shale PDEIS, Mountain West Research - Southwest.







## THE ECONOMY

Employment in three sectors - retail trade, services, and government - makes up almost 60 percent of Mesa County's total wage and salary employment, reflecting the county's role as western Colorado's trade and service center. The local economy is more diversified, however, than other western Colorado counties since the mining, manufacturing, and construction sectors each maintain significant shares of total employment (Table 3.16-2). Over the period 1976-81, the sectors with greatest growth have been mining, construction, and finance, insurance, and real estate (FIRE).

Income statistics (Table 3.16-3) by and large mirror the employment statistics. Retail trade, services, and government are the largest contributors to labor income; but mining, construction, and FIRE showed the greatest growth over the period considered. The single largest component of total personal income, however, is income produced by dividends, interest, and rent, which amounted to over \$150 million in 1981, 18 percent of total personal income. Per capita income in 1981 was estimated at \$9,821, slightly less than the Colorado state average of \$10,033. Cost-of-living data suggest that the cost of living in the Grand Junction area is slightly less than that of most American cities.

Although agriculture still exerts a strong influence on the character of the resource area, employment and income data emphasize the diminished role of agriculture in the local economy. Farm labor makes up less than three percent of the total work force and farm proprietors' income has become an erratic and declining contributor to area personal income, averaging less than one percent of the total over the years 1977 to 1981.

Unemployment in Mesa County has tended to parallel state levels. A sharp upturn in late 1982 was the direct result of the slowdown in energy development activities.

## ECONOMIC SECTORS POTENTIALLY AFFECTED BY RESOURCE MANAGEMENT DATA

### Agriculture

No significant changes are anticipated in the grazing management program, so no resultant effects on the local livestock industry are likely. Even if major changes in the grazing program were to occur, there would be little effect on the local economy since livestock production has ceased to be a major economic factor in the area. In 1980, about 1.5 percent of the county's







TABLE J.16-2

EMPLOYMENT BY TYPE AND BROAD INDUSTRIAL SECTORS  
FOR MESA COUNTY, 1976-1981

Sector	Mesa County					Average annual % growth 1976-81
	1976 <sup>a</sup>	1977 <sup>a</sup>	1978 <sup>a</sup>	1979 <sup>a</sup>	1980 <sup>a</sup>	
<u>Employment by place of work</u>						
Total employment <sup>b</sup>	28,590	31,562	33,987	36,269	38,340	41,951
Number of proprietors	4,172	4,572	4,782	5,025	5,176	5,263
Farm proprietors	1,397	1,354	1,329	1,295	1,304	1,327
Nonfarm proprietors	2,775	3,218	3,453	3,730	3,872	3,936
Total wage and salary employment	24,418	26,990	29,205	31,244	33,164	36,688
Farm	504	562	562	444	592	581
Nonfarm	23,914	26,428	28,643	30,800	32,572	36,107
Private	18,803	21,407	23,513	25,441	27,078	30,413
Ag. serv., for., fish., and other <sup>c</sup>	95	108	82	90	116	132
Mining	950	1,095	1,251	1,729	2,357	2,710
Construction	1,835	2,269	2,671	2,862	2,740	3,589
Manufacturing	2,378	2,565	2,595	2,639	2,627	2,654
Nondurable goods	631	699	658	645	712	815
Durable goods	1,747	1,866	1,937	1,994	1,915	1,839
Transportation and public utilities	1,693	1,812	2,069	2,274	2,339	(D) <sup>d</sup>
Wholesale trade	1,254	1,424	1,436	1,581	1,592	(D) <sup>d</sup>
Retail trade	4,764	5,530	6,027	6,394	6,738	7,758
Finance, insurance, and real estate	849	947	1,094	1,209	1,344	1,561
Services	4,985	5,657	6,288	6,663	7,225	7,832
Government and government enterprises	5,111	5,021	5,130	5,359	5,494	5,694
Federal, civilian	828	900	953	996	1,048	1,074
Federal, military	262	205	212	224	241	254
State and local	4,021	3,916	3,965	4,139	4,205	4,366

<sup>a</sup> Estimates based on 1972 SIC.<sup>b</sup> Consists of wage and salary jobs (full- and part-time) plus number of proprietors<sup>c</sup> Includes number of jobs held by U.S. residents working for international organizations in the U.S. Primary source for private nonfarm employment: ES-202 covered wages - Colorado Division of Employment.<sup>d</sup> (D) Not shown to avoid disclosure of confidential data. Data are included in totals.

(L) Less than 10 wage and salary jobs.

<sup>d</sup> 1976-80, figures not available for 1981.

Source: Bureau of Economic Analysis







TABLE 3.16-3  
PERSONAL INCOME BY MAJOR SOURCES (THOUSAND OF DOLLARS) FOR MESA COUNTY, 1976-1981

Item	1976a	1977a	1978a	1979a	1980a	1981a	Average annual % change 1976-81
INCOME BY PLACE OF RESIDENCE							
Total personal income	367,574	435,423	506,732	603,286	704,521	851,126	18.3
Nonfarm personal income <sup>b</sup>	360,3400	429,167	503,972	594,626	698,363	846,129	18.6
Farm income	7,234	6,256	2,760	8,660	6,158	4,997	-7.1
Population (thousands)	66.6	68.6	72.2	76.9	82.8	86.7	5.4
Per capita personal income (dollars)	5,517	6,349	7,016	7,840	8,512	9,821	12.2
Derivation of personal income							
Total earnings by place of work <sup>c</sup>	265,527	318,289	374,905	443,088	517,261	633,147	19.0
Less: personal contrib. for social insurance	13,260	16,267	19,552	23,701	28,071	36,385	22.4
Plus: residence adjustment	840	1,736	-59	2,448	3,023	3,231	30.9
Equals: net earnings by place of residence	253,107	303,758	355,294	421,835	492,213	599,993	18.8
Plus: dividends, interest, and rent <sup>d</sup>	60,377	72,361	86,686	107,859	125,087	150,977	20.1
Plus: transfer payments	56,090	59,304	64,752	73,592	87,221	100,156	13.1
EARNINGS BY PLACE OF WORK							
Components of earnings							
Wages and salaries	222,321	267,279	320,636	376,718	449,076	556,899	20.2
Other labor income	17,441	22,174	26,932	30,984	36,638	43,425	20.0
Proprietor's income <sup>e</sup>	25,765	28,836	27,337	35,386	31,547	32,823	5.0
Farm	4,665	2,998	-975	5,171	1,723	344	-40.6
Nonfarm	21,100	25,838	28,312	30,215	29,824	32,479	9.0







TABLE 3.16-3 (Continued)

Item	1976a	1977a	1978a	1979a	1980a	1981a	Average annual % change 1976-81
Earnings by industry							
Farm	7,234	6,256	2,760	8,660	6,158	4,997	-7.1
Nonfarm	258,293	312,033	372,145	434,428	511,103	628,150	19.5
Private	207,576	256,427	310,876	365,743	434,177	541,227	21.1
Ag.serv., for., fish., and other <sup>f</sup>	800	1,136	1,071	1,173	1,320	1,659	15.7
Mining	13,968	19,421	28,364	37,242	57,121	79,141	41.5
Construction	27,877	37,147	47,123	55,216	57,120	79,276	23.2
Manufacturing	24,124	29,065	31,933	35,502	39,987	47,596	14.6
Nondurable goods	7,955	9,639	9,235	10,313	12,517	15,726	14.6
Durable goods	16,169	19,426	22,698	25,189	27,470	31,870	14.5
Transportation and public utilities	28,109	33,163	40,768	48,335	55,309	(D) <sup>h</sup>	18.4 <sup>h</sup>
Wholesale trade	15,250	17,919	19,742	23,770	27,226	(D) <sup>h</sup>	15.6 <sup>h</sup>
Retail trade	39,325	46,591	54,129	61,828	71,516	87,284	17.3
Finance, insurance, and real estate	9,554	11,784	15,391	18,090	21,240	26,006	22.3
Services	48,569	60,201	61,269	84,587	103,338	122,634	20.4
Government and government enterprises	50,717	55,606	61,269	68,085	76,926	86,923	11.4
Federal, civilian	13,520	15,921	17,669	19,623	21,786	24,176	12.3
Federal, military <sup>g</sup>	587	483	537	615	753	899	8.9
State and local	36,610	39,202	43,063	48,447	54,387	61,848	11.1

<sup>a</sup> Estimates based on 1972 SIC.

<sup>b</sup> Total personal income less farm earnings (labor and proprietor's income) equals nonfarm personal income.

<sup>c</sup> Consists of wage and salary disbursements, other labor income, and proprietor's income, primary source for private nonfarm wages: ES-202 covered wages - Colorado Division of Employment.

<sup>d</sup> Includes the Capital Consumption Adjustment for rental income of persons.

<sup>e</sup> Includes the Capital Consumption Adjustment for nonfarm proprietors.

<sup>f</sup> Includes wages and salaries of U.S. residents working for international organizations in the United States.

<sup>g</sup> The estimates for Federal military earnings have been revised for the years 1977-81.

<sup>h</sup> (D) Not shown to avoid disclosure of confidential information, data are included in totals.

1976-1980 -- figures not available for 1981.

Source: Mountain West Research - Southwest, Inc. (1983) from Bureau of Economic Analysis (April 1983).







total employment and less than 1 percent of the county's total income were tied to livestock production. The possibility remains that individual permittees could be significantly affected by resource management changes that would have an impact on their allotments.

## Mining

About 11 percent of Mesa County's 1980 employment (4,400 jobs) was directly or indirectly reliant on mining. The county's one coal mine employs over 300 people and is on public land. The major mining employer, however, is the oil and gas industry which directly employed over 1,500 people in 1980. The better part of the drilling and production activity, however, serviced by the Mesa County oil and gas industry is outside the Grand Junction Resource Area. While changes in management of gas production activities in the resource area would have local effect, they would be of minor significance relative to the downturn in production brought about by the national recession. In the last two years, layoffs have been substantial and a number of oil and gas service businesses have closed their Grand Junction offices.

## Manufacturing

The only manufacturing activity potentially affected by public resource management is the wood products industry. Mills within or near the Grand Junction Resource Area produce about 10 mmbf of lumber annually. Only small amounts of that come from public domain forest lands and changes in forest management are thus unlikely to have any impact. The greatest potential for significant impact lies in the amount, quality, and accessibility of fuelwood made available to the public.

## Retail Trade and Services

These are the biggest economic sectors in Mesa County providing direct employment to over one-third of the county's workforce (over 14,000 jobs). Although most potential effects on these sectors are indirect and unmeasurable, changes in recreation management, particularly for river and wilderness activities, may have measurable economic impacts.







## PUBLIC SERVICES AND GOVERNMENT FINANCES

Substantial data on the area's systems for providing physical and human services are available in the Clear Creek Shale Oil Environmental Impact Statement, the Mobil-Pacific Oil Shale Environmental Impact Statement, and related documents. The data are too extensive and diverse for summarization but are available should the RMP produce an effect on the area's public services.

The same documents contain considerable information on local government finances which is summarized here on Tables 3.16-4 and 3.16-5.

Mesa County has recently strengthened its revenue position with the addition of a 2 percent county sales tax. Using this together with its traditional revenue sources, the county should be able to support its future operations and growth-related needs. Grand Junction appears to have excellent fiscal management and employs financial practices that are appropriate for a municipality in Colorado having to accommodate growth (DEIS, Chevron Clear Creek Shale Oil Project, 1983).

Smaller communities in Mesa County (De Beque, Palisade, Collbran, and Fruita) vary widely in their current fiscal condition. De Beque and Collbran have very limited resources to deal with growth. Palisade has experienced rapid growth, but its revenues have not kept pace with the increased expenditures because of rising demand and inflation. Fruita reduced its sales and use tax from 3 to 2 percent, because of enactment of the county-wide sales tax. During the recent past, however, Fruita has taken a number of measures to finance growth. It has added to its tax base through annexation. The funds received from the county in return for support of the county-wide sales tax have gone into infrastructure improvements--sewer, water, and other capital projects (Chevron Shale Oil Company Clear Creek Project, Socioeconomic Analysis, Brisive, Maphis, Muny and Lamant, 1982).

Three county revenue elements are directly affected by public lands in the resource area - Payments in Lieu of Taxes (PILT), Mineral Lease Royalty payments, and free use of materials. Table 3.16-6 shows PILT and mineral royalty payments and their relative contribution to total county revenue for 1980 to 1984.





TABLE 3.16-4  
FISCAL CHARACTERISTICS OF COUNTY AND MUNICIPAL GOVERNMENTS --  
REVENUES -- FISCAL 1982 (BUDGETED)

County/City	1982 Population	Assessed Valuation <sup>2/</sup>	Property Tax Rate <sup>1/</sup>	Property Tax <sup>2/</sup>	Sales Tax <sup>2/</sup>	Shared Revenues <sup>2/</sup>	Other Revenues <sup>2/</sup>	Total Revenues <sup>2/3/</sup>	Per capita Revenues
Mesa County	87,376	340,880	16.79	5,642	9,249	8,220	16,382	39,493	452
Collbran	353	692	12.67	9	162	2	24	197	558
De Beque	376	542	18.16	11	138	13	234	396	1,053
Fruita	3,026	7,963	16.06	119	800	32	1,328	2,279	753
Grand Junction	30,443	128,355	12.0	1,544	8,806	650	6,293	17,293	5,689
Palisade	1,877	4,129	23.77	96	460	27	73	656	349

<sup>1/</sup> Mills.

<sup>2/</sup> Thousands of dollars.

<sup>3/</sup> Does not include grants from the OSTF or individual energy developers. These additional funds are expressed as expenditures in Table 2.13-14.

Source: Mountain West Research-Southwest, Inc. (1983); from BMML (1982).





TABLE 3.16-5  
FISCAL CHARACTERISTICS OF COUNTY AND MUNICIPAL GOVERNMENTS --  
GENERAL FUND EXPENDITURES -- FISCAL 1982 (BUDGETED)

	Total Expenditures <sup>1/</sup>	Per Capita Expenditures	Debts Outstanding	Debt Service General Remaining Obligation Capacity
Mesa County	\$ 8,885,367	\$ 95.17	\$1,000,000 (est.)	\$ 5,113,197
Grand Junction	\$19,932,184	\$ 659.85	\$8,165,000 (sewer)	
			\$360,000 general obligation (municipal)	\$12,504,913
			\$5,350,000 (water) \$ 385,000 (golf course)	
Fruita	\$ 2,335,887	\$ 727.46	\$4,000,000 (municipal) \$ 448,000 (sewer)	Limited by referendum
Palisade	\$ 225,613	\$ 121.43	\$1,300,000 (water) \$ 290,000 (sewer)	\$ 393,674
Collbran	\$ 197,002	\$ 511.69	\$ 112,000 (water) \$ 73,000 (sewer)	\$ 69,278
De Beque	\$ 1,494,526	\$ 5,153.54	\$ 93,000 (water/sewer)	\$ 58,764

<sup>1/</sup> Includes general fund tax revenues and grants from OSTF and individual energy development companies.

Source: BLM (1983).







TABLE 3.16-6  
MESA COUNTY: PILT AND MINERAL ROYALTY PAYMENTS,  
TOTAL COUNTY REVENUE, 1980-84 (\$1,000)

	1980	1981	1982	1983	1984
PILT	890.8 (4.3%)	839.8 (3.5%)	723.1 (2.7%)	636.1 (2.3%)	690.0 (2.8%)
Mineral Royalty	63.7 (0.3%)	76.8 (0.3%)	150.8 (0.6%)	149.6 (0.5%)	150.0 (0.6%)
Total Revenues	20,759.7	23,534.6	26,934.6	28,218.9	24,914.7

PILT is an annual payment to counties based on county population and total "entitlement" acres of federal lands. The figures above include payments based on Forest Service and National Park Service lands in Mesa County. PILT is subject to annual Congressional appropriation and is unaffected by local public land management except for sales of public land.

Mineral royalty payments are the county's share of royalty payments made on mineral production from the federal mineral estate. Federal and Colorado law direct that the county of origin receive 25 percent of the total royalty payment up to \$200,000 annually. A portion of the total royalty payment goes into the State's Local Government Mineral Impact Fund which is available on a grant basis to Mesa County and jurisdictions within the county to offset the impacts of mineral development. Most of Mesa County's royalty payment is based on gas production in the county (a small amount is based on coal production). Although the payment is vulnerable to changes in production levels, the \$200,000 cap reduces the potential for any significant adverse impact.

The County Road Department has free use permits for about 1.2 million cubic yards of gravel. In 1983, they used less than 50,000 yards, which accounted for about 40 percent of total use. The sales value of this gravel is about \$20,000. Loss of free use would probably affect the level of road maintenance (often on public lands) rather than road department revenues.

Municipalities and service jurisdictions receive no revenue from public land management. Their operation and fiscal status can, however, be directly affected by their use of public lands.





## 3.17 LAND TENURE

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## Public Law 86-608 R

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TABLE 3.17-1  
LAND OWNERSHIP IN THE PLANNING AREA

Ownership	Acres
Public Land	1,281,353
Private Land*	707,861
National Park Land	20,445
National Forest Land	7,680
State Land	<u>4,436</u>
Total	2,021,775

\*BLM administers all or parts of the mineral estate on 179,331 acres of private land.

#### EXISTING MANAGEMENT SITUATION

##### CURRENT MANAGEMENT

For the past eight years, the highest priority under the lands program has been to process applications for energy-related rights-of-way. Most of the 100 to 150 applications processed each year are for energy-related programs such as oil and gas, coal, and oil shale. This trend is expected to continue. Approximately seven hundred fifty right-of-way authorizations are recorded in the Grand Junction Resource Area office. The majority of these rights-of-way are located in the Baxter-Douglas, De Beque, and Collbran areas.

The current management emphasis under the land tenure program is generally to retain public land in federal ownership. Because of the priority on energy-related casework, little emphasis is placed on processing sale or exchange proposals. Two exchange proposals (Gobbo and Jerry Creek) are currently being processed: the Gobbo exchange was begun in June 1981, and the Jerry Creek exchange was begun in August 1981. No sale proposals are under consideration. The management framework plans for this resource area primarily recommended that public land be retained in federal ownership.







The State of Colorado filed a State Indemnity Selection (SIS) application on April 13, 1982, to acquire some public land in lieu of certain school land that was encumbered by other reservations before the state's title could attach. The state's application identified about 3,466 acres in the Grand Junction Resource Area for consideration and evaluation. On December 3, 1983 BLM transferred 240 acres of public land east of Walker Field Airport and adjacent to Interstate 70 to the State of Colorado. Evaluation continues on the 3,226 acres remaining in the SIS application for the Grand Junction Resource Area.

Municipal waste disposal is currently managed by authorizing the counties to operate sanitary landfills on public land leased under the Recreation and Public Purposes Act (R&PP). BLM responds to R&PP applications filed by the counties for sanitary landfills necessary to handle municipal waste disposal. Mesa County is the only municipality in the Grand Junction Resource Area that has R&PP leases for landfills. Mesa County operates one sanitary landfill and a transfer station under R&PP leases, and they are in the process of cancelling two other R&PP leases for old landfills that are no longer needed.

#### SUPPLY-DEMAND

It is anticipated that the demand for right-of-way authorizations will continue at the current level which is between 100 and 150 right-of-way applications per year. The majority of the applications are for energy related programs such as oil and gas, coal, and oil shale.

The BLM has received about 50 general inquiries from individuals interested in purchasing public land in the Grand Junction Resource Area. The majority of these individuals are interested in about 2 to 10 acres fairly close to town with shade trees. The public land likely to be identified for disposal would not fit that criteria.

In response to RMP scoping meetings, three written exchange proposals and ten written sale proposals (the proposals are for BLM to offer the parcels for sale) have been received from individuals interested in acquiring public land. These proposals involve public land parcels ranging in size from less than 5 acres to about 500 acres.

Mesa County anticipates an increase in population and, therefore, more demand for municipal waste disposal sites. The Mesa County Waste Management Plan approved in February 1983 indicates that the demand will be primarily for more transfer stations with the possibility of another landfill site. Future needs for any of the counties' waste disposal facilities will be handled under the Recreation and Public Purposes Act. BLM anticipates that suitable public land can be identified to meet the future needs of the counties.





## CAPABILITY ANALYSIS

### DEFINITION OF RESOURCE CAPABILITY LEVELS

See Appendix A, CA Form 1

### MANAGEMENT PRACTICES

See Appendix B, CA Form 2

### RESOURCE CAPABILITY LEVEL DESCRIPTIONS

See Appendix C, CA Forms 3





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Land Tenure Adjustment Specialist Name Cathy Legen-Pearce

Date November 1983

APPENDIX A

CAPABILITY ANALYSIS FORMS 1

DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Capability Level 1 (Define the highest priority for management)

RETENTION - Place lands that fit the Category I planning criteria in RETENTION ZONES. Criteria includes wilderness study area, wild horse preserve, TSE species habitat areas, valuable lands for recreation or wildlife, and large blocks of public lands which are suitable for multiple use management, etc.

Resource Capability Level 2 (Define the second highest priority for management)

DISPOSAL - Place lands that fit the Category II planning criteria in DISPOSAL ZONES. Criteria includes lands proximate to cities, towns or development areas, and isolated non-own tracts.

GOAL: Improve management efficiency.

Resource Capability Level 3 (Define the third highest priority for management)

ACQUISITION - Identify private lands for acquisition which are necessary to improve management of a particular resource. Examples: the private lands within the Little Book Cliff Wild Horse Area were recommended for acquisition through exchange.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Land Tenure Adjustment      Specialist Name Cathy Logan-Pearce

Date November 1983

Resource Capability Level 1 (Define the highest priority for management)

RETENTION - Place lands that fit the Category I planning criteria in RETENTION ZONES. Criteria includes wilderness study area, wild horse preserve, T&E species habitat areas, valuable lands for recreation or wildlife, and large blocks of public lands which are suitable for multiple use management, etc.

Resource Capability Level 2 (Define the second highest priority for management)

DISPOSAL - Place lands that fit the Category II planning criteria in DISPOSAL ZONES. Criteria includes lands proximate to cities, towns or development areas, and isolated non-urban tracts.

GOAL: Improve management efficiency.

Resource Capability Level 3 (Define the third highest priority for management)

ACQUISITION - Identify private lands for acquisition which are necessary to improve management of a particular resource. Example: the private lands within the Little Book Cliff Wild Horse Area area recommended for acquisition through exchange.







## LAND TENURE ADJUSTMENT

I. Which lands should be retained, disposed of, or acquired to improve resource management?

A. Public lands will be placed in one of the following categories:

1. Category I - RETENTION ZONES - Lands and mineral resources which will be retained under BLM administration for multiple use and will not be considered for sale. However, exchange proposals, boundary adjustments, and recreation and public purposes applications would be considered suitable for lands in the retention zones.

a. Public lands to be considered for Category I:

- 1) Wilderness areas and wilderness study areas.
- 2) National conservation areas.
- 3) Wild and scenic rivers and wild and scenic study rivers.
- 4) National or historic trails.
- 5) Natural or research natural areas.
- 6) Designated areas for cultural or natural history.
- 7) Designated areas of critical environmental concern.
- 8) Designated wild horse preserves.
- 9) Other congressionally designated areas.
- 10) Threatened or endangered species habitat areas.
- 11) Riparian habitat areas.
- 12) Valuable recreation areas.
- 13) Wetland areas as defined in Executive Order 11990, dated May 24, 1977.
- 14) Flood plain areas (100-year) as defined in Executive Order 11988, dated May 24, 1977.
- 15) Large blocks of public lands which are suitable for multiple use management.
- 16) Lands containing water sources with valid existing water rights held by BLM (usually a 40-acre tract containing a spring)
- 17) Big game critical winter range.

b. Public mineral resources to be considered in Category I:

- 1) Known recoverable coal resource areas.
- 2) Known geologic structures (oil and gas).
- 3) Areas identified to have nationally significant oil shale deposits.
- 4) Lands known to contain economic deposits of locatable and salable minerals.





2. Category II - DISPOSAL ZONES - Lands which will be considered for sale or transfer through exchange or boundary adjustment. Generally, private lands in these zones will not be acquired through exchange. In sales, the law requires that the mineral estate be reserved to the government.

- a. Public lands to be considered for Category II:

- 1) Lands proximate to cities, towns, or development areas.
- 2) Isolated non-urban tracts so located as to make effective and efficient management impractical.
- 3) Lands designated for agricultural, commercial, or industrial development as the highest use or otherwise most appropriate use..

- b. Consider impacts to local governments.

- c. Identify specific tracts for disposal.

- d. Consider reserving public access in patent, where it would benefit the public.

3. Category III - FURTHER STUDY - Lands and mineral resources which will require further study in order to determine whether they should be placed in Category I or II.

- B. Consider acquisition of private land identified by the resource specialists as necessary to improve management of a particular resources. Give priority to exchange as the method of acquisition.

II. Which public lands are suitable for lease or sale for recreation and public purposes to meet the needs of the state and local governments?

- A. Coordinate with local governments to identify needs for recreation and public purposes--parks and landfills.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRESCRIPTIONS

Resource Name \_\_\_\_\_

APPENDIX B

Scenic View \_\_\_\_\_

CAPABILITY ANALYSIS FORMS 2  
MANAGEMENT PRESCRIPTIONS

Describe the types of management that you would use in this area (check all that apply):

Generally retain public lands and control resources in these areas:

Do not consider these lands for sale.

Consider high priority exchange proposals for public lands within this area.

Joint management, boundary adjustments and other arrangements may be considered suitable within this area.

Encourage Section 105 (b)(1) projects where appropriate to reduce public lands where there are no known riparian values.

Describe the types of management you would use in this area (check all that apply):

Priority for disposal of public lands where there are small amounts of land, but exchange and boundary adjustment.

Public lands in this area can be exchanged for private lands in a riparian zone. Generally, do not acquire private lands through exchange that are within a disposal zone.

Encourage considering Section 105 (b)(1) projects where appropriate to reduce public lands that have no known riparian values and are within a disposal zone. This type of conversion would benefit BLM by increasing management efficiency reducing land estates.

Keep inventory of BLM lands to a minimum for lands within a disposal zone.

Describe the types of management you would use in this area (check all that apply):

Priority in acquisition of private lands that are necessary for resource management. Acquire on exchange as opposed to acquisition rather than purchase.

High priority acquisition of two parcels of private lands within 14000-14000 25/000 Wild Horse Area. Also, acquisition of one parcel of private land in the 25000-25000 25/000 area.





CAPABILITY ANALYSIS FORM 2  
MANAGEMENT PRACTICESResource Name Land Tenure AdjustmentSpecialist Name Cathy Logan-Pearce Date November 1983Describe the types of management that you would use in RCL 1 areas (RETENTION ZONES)

Generally retain public lands and mineral resources in these zones.

Do not consider these lands for sale.

Consider high priority exchange proposals for public lands within this zone.

Joint management, boundary adjustments and R&PP applications would also be considered suitable within this zone.

Encourage Section 209 FLPMA mineral conveyance applications to reduce split estates where there are no known mineral values.

Describe the types of management you would use in RCL 2 areas (DISPOSAL ZONES)

Priority for disposal of public lands within these zones; through sale, R&PP, exchange and boundary adjustment.

Public lands in this zone can be exchanged for private lands in a retention zone. Generally, do not acquire private lands through an exchange that are within a disposal zone.

Encourage considering Section 209 FLPMA mineral interest conveyance applications for lands that have no known mineral values and are within a disposal zone. This type of conveyance would benefit BLM by improving management efficiency; reducing split estates.

Keep investment of BLM funds to a minimum for lands within a disposal zone.

Describe the types of management you would use in RCL 3 areas (ACQUISITION ZONES)

Priority on acquisition of private lands identified by resource specialists as necessary for a resource program. Emphasis on exchange as method of acquisition rather than purchase.

High priority acquisition of two parcels of private lands within Little Book Cliffs Wild Horse Area. Plus, acquisition of one parcel of private land in the Unawep Seep area.





## 3.18 TRANSPORTATION

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## OVERLAYS

## TR3.18-1. Road Maintenance







### 3.18 TRANSPORTATION

#### RESOURCE AREA PROFILE

##### DESCRIPTION OF RESOURCE

Approximately 1,912 miles of road throughout the Grand Junction Resource Area provide physical and/or legal access to public land. These roads are located on federal, state, and private lands. Two hundred sixty-seven miles of federal and state highways run through the resource area. One hundred thirty county roads in three counties provide 710 miles of road that are important to the resource area transportation system. These roads are shown in overlay TR2.16-1 (roads in the Grand Junction Resource Area).

County roads are very important in providing legal access to public lands. Recently the counties have been reducing their road mileage. Their vacation of public roads have reduced the amount of legal access to public lands. This hinders the BLM in its ability to manage public lands.

##### CONDITION AND TREND

Most of the roads on public lands are in poor condition and do not meet BLM road standards. Roads under BLM control are not maintained regularly, and many would require reconstruction and realignment to accommodate any increased use. These roads are usually passable only during dry weather, and many require 4-wheel drive and high clearance vehicles. During wet weather, the 4-wheel drive vehicles cause considerable damage to the roads.

Most of the roads are deteriorating from erosion and because they lack regular maintenance. A few energy-related roads have been built properly and receive adequate maintenance to stay in good condition.

Many of the roads on public lands have no legal access. The access is controlled by adjacent private property owners who close the roads to the public. A lot of these landowners derive benefits from public land through livestock permits and hunting lease revenue.







Only the Gateway and Dominguez Planning Units have good legal public access available. Legal access is available to parts of the Glade Park, Baxter Douglas, Mount Garfield and De Beque Planning Units. This access is to the lower elevation portion of these units. Access to higher elevation areas, for which a demand exists because of multiple use opportunities, is very poor or nonexistent. The Collbran and Kannah Creek Planning Units have little legal public access.

During recent years, legal access has been reduced by abandonment and closures of county roads. This trend seems to be increasing.

## EXISTING MANAGEMENT SITUATION

### CURRENT MANAGEMENT

The existing transportation system for the resource area consists of federal, state, and primary county roads that receive frequent maintenance and secondary county roads, private roads, energy roads, and BLM-managed roads that receive infrequent or no maintenance. The public road system (federal and state highways and county roads) is an integral part of the transportation system for providing access to public lands. Roads receiving state, county, or BLM maintenance are shown on overlay TR3.18-1. Those roads maintained by the energy companies are not shown on the overlay due to the lack of data for this maintenance.

Access to many areas of public lands is controlled by adjacent private landowners. Their restrictions on access to public lands prevent multiple use management on a considerable portion of the public land. Usually where this situation occurs, only the range and mineral resources needs are being served. Other resources such as forestry and recreation cannot be managed adequately.

Many of the roads on public lands are only passable during dry weather. Travel on these roads during adverse weather by four-wheeled drive vehicles causes serious erosion problems and impacts to other resources.

The BLM and the intermixed private road systems provides access for livestock, mineral, forestry, recreation, and BLM management. As mentioned previously, if the access is controlled by private land, then it is not possible to manage all the resource values.

The BLM current acquisition program for acquiring access to public lands is very limited. Some legal public access is acquired to support management programs, especially forestry. Little if any funds have been available to acquire public access for recreation and wildlife-related activities. For range-related projects, temporary access is usually obtained to carry out the projects. No access is acquired to support mineral programs. Previous easements acquired in the Grand Junction Resource Area are presented in Table 3.18-1.







TABLE 3.18-1  
ROAD EASEMENTS ACQUIRED BY BLM

Name	Location	Planning Unit
Deer Flats	Sec. 31, T.9S., R.99W., 6th P.M. Sec. 36, T.9S., R.100W., 6th P.M.	De Beque
Corcoran Wash	Sec. 20&21, T.9S., R.98W., 6th P.M.	De Beque
Round Mountain	Sec. 30, T.9S., R.98W., 6th P.M.	De Beque
Sinbad Valley	Sec. 9, T.49N., R.10W., NMPM	Gateway
Sunnyside	Sec. 29, T.8S., R.96W., 6th P.M.	Collbran
Tom's Canyon	Sec. 6, T.13S., R.103W., 6th P.M.	Glade Park

Roads on public lands with legal access that are used frequently by various users have been maintained infrequently by the BLM when funds were available. These roads are maintained under the guidelines and stipulation of the Grand Junction District Wide Road Maintenance Umbrella EAR (CO-070-GJ9-28) and other Bureau maintenance policies. The roads maintained in previous years are shown on overlay TR3-18-1. In those areas where there is active energy exploration, development, and/or production, the energy companies have maintained numerous roads. Recently, due to the decline in this activity, less road maintenance is being done. Many new roads have also been built for energy purposes.

#### SUPPLY-DEMAND ANALYSIS AND DEPENDENCY

Demands for transportation needs in the resource area are directly related to resources found on public lands. This includes demands for commercial activities, such as; livestock grazing, forestry, and minerals and non-commercial type activities, such as; ORV's, hunting, camping, fuel wood, Christmas trees, and other recreation uses.

For the livestock and mineral related activities there is a fairly adequate road system and when new roads for mineral uses are required, they are permitted unless their are adverse environmental impacts. The road system for other resources and uses of public lands is inadequate in many areas. Adequate funding and support has not been available to correct this situation.

Legal public access is needed in many areas to allow the BLM to carry out multiple use management, especially for forestry, range, recreation, and wildlife related programs. Currently, legal access is not required for mineral operations, since mineral resources can be leased without providing legal access to the leasee.

There are some areas with numerous roads or roads into critical wildlife ranges and fragile environments. This access causes impacts to various resources and users of public lands. Major impacts are felt by soil, water,





cultural, and wildlife resources. Permanent and/or seasonal closures of many roads in these areas need to be considered to protect these resources. Also restrictions to access only for BLM administrative purposes and permittees could be used in some of these areas.

## CAPABILITY ANALYSIS

### DEFINITIONS OF RESOURCE CAPABILITY LEVELS

See Appendix A, Capability Analysis Form 1.

### MANAGEMENT PRACTICES

Not Applicable.

### DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

Not Applicable.





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Transportation Specialist Name Joe Stewart  
Date 11/17/61

APPENDIX A

Resource Capability Level 1 (Define the highest priority for management)

CAPABILITY ANALYSIS FORMS 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Transportation is not a resource in the support of the various resources and users of the unit. When the various resources identify their needs and level of management, the transportation portion of the RMP can be described to match the various resource needs.

Resource Capability Level 2 (Define the second highest priority for management)

Resource Capability Level 3 (Define the third highest priority for management)





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Transportation Specialist Name Jeb Stuart  
Date 11/17/83

Resource Capability Level 1 (Define the highest priority for management)

Transportation is not a resource. It is a support function for various resources and users of public lands. When the various resources identify their needs and levels of management, the transportation portion of the RMP can be described to match the various resource needs.

Resource Capability Level 2 (Define the second highest priority for management)

Resource Capability Level 3 (Define the third highest priority for management)





3.19 PUBLIC UTILITIES

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### 3.19 PUBLIC UTILITIES

#### RESOURCE AREA PROFILE

Most of the public utility systems in the resource area are oil and gas pipelines, power lines, and telephone lines (see inventory overlay PU2.17-1). Most pipelines are located north of the Colorado River and most telephone lines are located south of the river. Topographic constraints generally limit utility systems to drainage bottoms.

The major oil and gas transportation lines are located mainly in the western part of the resource area, and have routes over Douglas and Baxter passes. Major power lines cross the resource area along the Colorado River and the eastern portion of the resource area. Small distribution power lines are mostly short extensions of the distribution lines serving the rural private lands around Grand Junction. Most of the area's oil and gas activity and associated collector pipelines are located north of the Book Cliffs.

#### EXISTING MANAGEMENT SITUATION

##### CURRENT MANAGEMENT

Public utility routes are currently located in response to right-of-way grant applications by industry and public utility companies. Applications are processed generally in the order received, and environmental reports are written to assess impacts upon the current resource values of the proposed project locations. Since sensitive and unsuitable areas have not been identified, utility companies often propose utility routes that must be modified or rejected based upon impacts identified in the environmental reports.





## SUPPLY-DEMAND ANALYSIS AND DEPENDENCY

Increased energy development within the planning area and western Colorado, along with increased population levels, will create a need for additional public utility routes.

The distribution of public land causes locational dependencies by private and community entities. Due to the large blocks of public lands within the area, major utility projects must be routed across public lands.

## CAPABILITY ANALYSIS

### DEFINITIONS OF RESOURCE CAPABILITY LEVELS

See CA Form 1, Appendix A

### MANAGEMENT PRACTICES

Not Applicable.

### DESCRIPTIONS OF RESOURCE CAPABILITY LEVELS

Not Applicable.





# CAPABILITY ANALYSIS FORM 1 DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Public Utilities Specialist Name Baker  
Date 11-15-53

## APPENDIX A

### CAPABILITY ANALYSIS FORMS 1 DEFINITIONS OF RESOURCE CAPABILITY LEVELS

#### Resource Capability Level 1

- Areas for natural values
- WSAs
- TSE actual locations

#### Resource Capability Level 2 (Define the second highest priority for management)

##### sensitive areas

- wild horse area
- deer & elk critical winter range
- deer migration areas
- all warbler butterfly colony
- TSE plant & animal habitat
- paleo & cultural sites
- WSAs for horses
- WSAs 1 & 11
- scenic areas, natural areas
- rec. sites
- wild & scenic river nominations
- larger wash study area
- municipal watershed
- unique geologic areas

#### Resource Capability Level 3 (Define the third highest priority for management)

##### sensitive areas

- everything else





CAPABILITY ANALYSIS FORM 1  
DEFINITIONS OF RESOURCE CAPABILITY LEVELS

Resource Public Utilities Specialist Name Baker  
Date 11-15-83

Resource Capability Level 1 (Define the highest priority for management)

exclusion zones:

- ACECs for natural values
- WSAs
- T&E actual locations

Resource Capability Level 2 (Define the second highest priority for management)

sensitive zones:

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| - wild horse area                  | - scenic areas, natural areas     |
| - deer & elk critical winter range | - rec. sites                      |
| - deer migration areas             | - wild & scenic river nominations |
| - silverspot butterfly colony      | - Badger Wash study area          |
| - T&E plant & animal habitat       | - municipal watershed             |
| - paleo & cultural sites           | - unique geologic areas           |
| - ACECS for hazards                |                                   |
| - VRM I & II                       |                                   |

Resource Capability Level 3 (Define the third highest priority for management)

suitable areas

- everything else





3.20 FIRE MANAGEMENT

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It is Bureau policy to contain all wildfires (man-caused or natural) during the first burning period (10 a.m. to 10 p.m.). It is also Bureau policy to minimize the total resources lost, suppression and rehabilitation cost, and environmental damage for fires that escape containment during the first burning period. On the average, 37 fires (man-caused or natural) are suppressed each year. They generally occur in the Barker-Douglas Pass, Hook Cliffs, and Grand Park areas (including several) or along the Colorado River (man-caused).

The use of fire as a management tool (prescribed burning) is increasing each year. The Grand Junction Resource Area has been involved in prescribed burning for the past five years. Currently, the BLM is in cooperation with the U.S. Forest Service and private landowners in the following area, has developed a plan to burn 13,000 acres over a 12-year period. Approximately 3,000 acres will be burned each year to increase forage production for wildlife and livestock. The plan also is developing a shelter program with the Colorado Division of Wildlife to treat 10 to 20,000 acres over a 10-year period to increase forage production for wildlife in the Barker/Douglas Pass area. Finally, the BLM will burn an average of 1,000 acres per year over the next five years to increase forage for livestock use within the Grand Junction Resource Area.

Both wildfire suppression and prescribed fire are accomplished in association with other agencies. The Grand Junction Resource Area has cooperative fire management agreements with the U.S. Forest Service and Mesa and Garfield Counties. The purpose of these agreements is to provide assistance in suppressing fires that exceed any one agency's capabilities.

The fire management program employs two full time and \_\_\_\_\_ seasonal people from \_\_\_\_\_ to \_\_\_\_\_.







### 3.20 FIRE MANAGEMENT

#### RESOURCE AREA PROFILE

Not applicable.

#### EXISTING MANAGEMENT SITUATION

#### CURRENT MANAGEMENT

It is Bureau policy to contain all wildfires (man-caused or natural) during the first burning period (10 a.m. to 10 p.m.). It is also Bureau policy to minimize the total resources lost, suppression and rehabilitation cost, and environmental damages for fires that escape containment during the first burning period. On the average, 57 nonprescribed (man-caused or natural fires) are suppressed each year. They generally occur in the Baxter-Douglas Pass, Book Cliffs, and Glade Park areas (lightning caused) or along the Colorado River (man-caused).

The use of fire as a management tool (prescribed burning) is increasing each year. The Grand Junction Resource Area has been involved in prescribed burning for the past five years. Currently, the BLM, in cooperation with the U.S. Forest Service and private landowners in the Collbran area, has developed a plan to burn 15,000 acres over a 12-year period. Approximately 3,000 acres will be burned each year to increase forage production for (wildlife and livestock?). The BLM also is developing a similar program with the Colorado Division of Wildlife to treat from 10 to 20,000 acres over a 10-year period to increase forage production for wildlife in the Baxter/Douglas Pass area. Finally, the BLM will burn an average of 1,000 acres per year over the next five years to increase forage for livestock use within the Grand Junction Resource Area.

Both wildfire suppression and prescribed fire are accomplished in association with other agencies. The Grand Junction Resource Area has cooperative fire management agreements with the U.S. Forest Service and Mesa and Garfield Counties. One purpose of these agreements is to provide assistance in suppressing fires that exceed any one agency's capabilities.

The fire management program employs two full time and \_\_\_\_\_ seasonal people from \_\_\_\_\_ to \_\_\_\_\_.





## SUPPLY-DEMAND AND DEPENDENCY

The role of fire in land management is changing dynamically. In the past, all fires were viewed as having detrimental effects on the land. However, over the past few years, it has been determined that fire can have a beneficial effect in land management and, also, that it can be used as a tool in obtaining land management objectives.

The need to suppress fires on public land will continue to increase. Urbanization adjacent to public land, greater facility development, and presence of historical structures will all increase the need for fire suppression in the future. The demand to use fire as a tool to reach management objectives will also increase. Prescribed burning to increase forage production for wildlife and livestock is in many cases more efficient than other methods. Also, it is now recognized that fire can and does play a significant role in providing a more diverse ecosystem. Prescribed fire management is expected to be applied to approximately 5,000 acres per year over the next ten years. This is a dynamic contrast to five to ten years ago when fire was not used as a management tool and all fires were totally suppressed.

Through interagency cooperative agreements for fire management (suppression and prescribed burning), the Grand Junction Resource Area has the capability to meet demands for fire management.





3.21 NOISE

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One commercial airport is located in the resource area at Grand Junction. This airport is situated on the north side of Grand Junction, and handles traffic to the north and east of the main runway. During take offs and landings by large aircraft, some noise is audible on the adjacent public lands.

Several small private airstrips also are located in the resource area. Traffic on these airstrips is very light by small aircraft, and noise audible on public lands is minimal.

Mines, Drilling Operations, and Gravel Pits

Several coal mines in the resource area generate noise from their operations, processing plants, and rail yards. Generally the area of noise disturbance is a radius of one mile or less from the noise source. The proposed gas compressor station could produce noise on public lands within a distance of one mile from the noise source.

Exploration and development for natural gas generate noise in the area of the activity. This activity varies greatly, but most of the activity occurs during the summer season. Noise produced is short term, lasting only during the drilling operation. Generally the area of disturbance is a radius of less than 1 mile from the noise source.

Several natural gas compressor stations also generate noise in the resource area. The disturbance from this noise source is usually within a one mile radius of the source.

Noise from gravel pit operations are also usually local in their operations. Any of these operations take place during the summer construction season.





### 3.21 NOISE

#### RESOURCE AREA PROFILE

##### DESCRIPTION OF RESOURCE

###### Airports

One commercial airport is located in the resource area at Grand Junction. This airport is situated on the north side of Grand Junction, and public lands lie north and east of the main runway. During take offs and landings by large aircraft, some noise is audible on the adjacent public lands.

Several small private airstrips also are located in the resource area. Traffic on these airstrips is very light by small aircraft, and noise audible on public lands is minimal.

###### Mines, Drilling Operations, and Gravel Pits

Several coal mines in the resource area generate noise from their operations, processing plants, and haul routes. Generally the area of noise disturbance is a radius of one mile or less from the noise source. The proposed Dorchester mine could produce noise on public lands audible within a distance of one mile from the noise source.

Exploration and development for natural gas generate noise in the area of the activity. This activity varies greatly, but most of the activity occurs during the summer season. Noise produced is short term, lasting only during the drilling operation. Generally the area of disturbance is a radius of less than 1 mile from the noise source.

Several natural gas compressor stations also generate noise in the resource area. The disturbance from this noise source is usually within a one mile radius of the source.

Noise from gravel pit operations are also usually local in most operations. Many of these operations take place during the summer construction season.







## Major Highways and Railroads

The resource area has several major highway routes. Interstate 70 receives the most traffic and U.S. 50 going southeast out of Grand Junction receives the second most traffic. State highways 139 (Douglas Pass), 141 (Gateway), and 65 (Grand Mesa) are important secondary routes. These highways generate the most traffic noise in the resource area. Traffic noise can be audible at distances up to 10 miles or more from the highways depending upon atmospheric conditions, topography, and wind directions.

If oil shale resources are developed in the Roan Creek-Clear Creek area, traffic, noise will increase in that area.

The Denver and Rio Grande Western Railroad main east-west line runs through the resource area. A secondary line runs southeast from Grand Junction toward Delta. The main line parallels the Colorado River, and the other line follows the Gunnison River. Trains generate noise in the Ruby and Gunnison canyon areas. However, noise generated by trains is intense only during the passage of a train and is not constant like that produced by highway traffic.

Another major source of noise is generated by ORV use, especially motorcycles. Two cycle motorcycles produce considerable noise, and they can be heard for a considerable distance. Several areas near Grand Junction receive considerable use by motorcycles. A large portion of this use occurs on public lands north and east of the Walker Field (Grand Junction's airport).

All major highways are shown on the transportation overlay. The railroads are on the base map.











